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NON-ACTIVATED (APATHETIC) TYPE OF HYPERTHYROIDISM

BY FRANK H. LAHEY, M.D.*

AT various times during the past few years, we have discussed in other parts of the country a type of thyroidism which we have termed "apathetic thyroidism," but have said and written little about it in New England. Since this condition is one about which textbooks make little or no mention, one that is little appreciated and often unrecognized, and since it is one with very serious potential possibilities, it seems worth while to describe the condition in a journal read throughout New England.

We have for several years now, particularly in recent years, stated that there are very distinctly two types of thyroidism, the so-called activated type and the so-called non-activated or what we have termed the apathetic type of thyroidism.

Activated thyroidism is usually not difficult to recognize characterized as it is by its striking eye signs of stare or exophthalmos, its usually enlarged and firm thyroid, its striking pulse rate, its obvious tremor and its typical activation. Hyperthyroidism of the activated type when at all intense is not only very obvious from a diagnostic point of view, but it is capable of demonstrating itself by these same obviously diagnostic features as a state of the disease possessing very serious possibility of a fatality.

There exists, however, a different type of hyperthyroidism not characterized by these striking features, not possessing the obvious evidences of possible fatality and definitely possessing unsuspected ability to result fatally upon the addition of any extra burden in the way of an operative procedure.

A comparison of some of the clinical features of the two conditions will be of value in our endeavor to describe this condition.

Typical hyperthyroidism of the activated type is most characteristically seen in young girls with their unimpaired bodies capable of the greatest degree of reactive ability. Apathetic hyperthyroidism is typically seen in the more senile individuals from middle age on with their lessened capacity for reaction to such a toxicity as occurs with hyperthyroidism.

Activated hyperthyroidism is characterized either by stare or by exophthalmos, while patients with apathetic hyperthyroidism, as a rule, do not show eye signs. Their eyes as a rule are in repose.

The thyroid itself in typical activated hyperthyroidism is usually definitely enlarged often two or three times beyond the normal size; while the thyroid in apathetic hyperthyroidism is frequently small, even smaller than normal, but usually of a firm, pebbly character due to the fact that the hyperthyroidism has existed over a long period of time.

The apex beat in activated hyperthyroidism is quite typically forceful, usually being diffused forcefully over the entire precordium, while the apex beat in apathetic hyperthyroidism is not forceful, it is not thrusting in character and is distinctly not diffused over the precordium and not impressive in character.

The character of the pulse in activated hyperthyroidism is distinctly of a toxic variety. It is full, bounding and striking. The character of the pulse in apathetic hyperthyroidism is not striking. It is not usually so high as that in activated hyperthyroidism in which case the pulse rate not infrequently runs up to one hundred and sixty or over, while the pulse rate in apathetic hyperthyroidism is frequently one hundred and twenty or below.

The history of weight loss in activated hyperthryoidism of the typical exophthalmic variety is usually one of irregular course, there being frequent periods of weight loss with recoveries, while the weight loss history in apathetic hyperthyroidism is usually considerable, progressive and has extended, as a rule, over a period of several years.

The appearance of patients with activated hyperthyroidism is one of distinct youthfulness, even though the disease occurs in a patient well past middle life. This is due to the fact that activated hyperthyroidism is associated with a warm, moist, flushed skin in a patient who is distinctly activated and so gives the general appearance of youthfulness. One of the very striking evidences of activated hyperthyroidism is its tendency to produce a more youthful appearance in patients even though well outside the range of life considered that of youthfulness. It is typical, on the other hand, for apathetic hyperthyroidism to produce the appearance of senility, these patients usually appearing considerably older than they actually are. This is due to the fact that there is no flushing and

*Lahey—Director, Lahey Clinic. For record and address of author see "This Week's Issue", page 783.

warmth in the skin, that the skin is not moist; and that the patient appears non-activated and almost apathetically senile. The skin of the patient with apathetic hyperthyroidism is usually pigmented, cool and dry, often wrinkled from the weight loss, a combination which produces quite the opposite appearance from that seen in activated hyperthyroidism.

The basal metabolism rates of activated hyperthyroidism tend to be markedly elevated, plus forty, plus fifty, sixty, seventy and even over one hundred; while the basal metabolism rates found with apathetic hyperthyroidism tend to be relatively low, from plus thirty downward, occasionally even as low as plus twenty.

The course of activated hyperthyroidism is one of activation, the disease being distinctly active, but characterized by waves and remissions; while the course of apathetic hyperthyroidism tends to be of a much more chronic grade but without remissions and progressive in character.

We have seen a number of patients with apathetic hyperthyroidism go on to a fatality and the course which they pursue up to death differs quite definitely from that of activated hyperthyroidism. Patients who die with typical exophthalmic goitre of the activated type, die in activation excitation and delirium. It is characteristically necessary in patients with activated hyperthyroidism to need to utilize every possible measure to control the activation, many of the patients thrashing about in bed and requiring some form of restraint to say nothing of large doses of morphia to control them. The course of the fatality, however, which occurs in patients with apathetic hyperthyroidism is quite different from this type. These patients, if operated upon, go back to bed and either never recover consciousness and die in coma, or recover consciousness and quietly and peacefully sink into apathy, from that into coma, and die an absolutely relaxed death and without activation.

Here are two very distinctly different types of hyperthyroidism and so atypical may be the so-called apathetic hyperthyroidism without its eye signs, without goitre, without striking tachycardia and striking heart action, with low basal rates, without obvious activation reaction, the diagnosis is not infrequently overlooked through long periods of time.

One should also have in mind that these patients with apathetic thyroidism who seem to be very good risks, are, as a matter of actual experience, very poor risks and possess, unfortunately, none of the danger signals which indicate that they are poor risks. In fact, they are so unstriking in their appearance and clinical features that they not infrequently lead one to do operative procedures of too great extent resulting in unsuspected and unanticipated fatalities.

We know from our experience with hyperthyroidism of the apathetic type, that any patient with apathetic thyroidism, that is with long-standing thyroidism with marked weight loss and advanced years, may run a most excellent course upon the operating table only to go back to bed and die very unexpectedly. We are so apprehensive of this type of thyroidism and we realize from experience with it that it does not possess any warning signals of a possible fatality, that we have assumed the position that any patient with definite apathetic hyperthyroidism shall be done in a two stage hemithyroidectomy, the right lobe being removed at one stage, the patient sent home for six weeks to return at the end of that time for a subtotal hemithyroidectomy of the remaining lobe. We know of no way of avoiding fatalities with these serious risk patients except by this procedure. If one were to go by the patient's condition upon the operating table many mistakes will be made, since these patients do not impress one as to danger possibilities because of their repose, because of their low metabolism, because of the fact that they frequently run pulse rates of one hundred and twenty or below a hundred on the operating table, and because the character of their pulse and heart action is not tumultuous.

We are hopeful in describing this condition that we may bring about earlier diagnoses of the thyroidism of the apathetic type in patients past middle life so that if to be operated they may be seen at an earlier stage in their disease, and also that the possibilities of serious postoperative reactions and fatalities may be appreciated in spite of the apparent lack of danger as interpreted from lack of activation in the patient's symptoms.

EYE DEFECTS IN KINDERGARTEN CHILDREN

Eye defects were found in about one-fifth of approximately 1,000 Brooklyn and Manhattan kindergarten and day-nursery children who were examined by eye specialists. This proportion is almost as large as that of children with eye defects in older age groups, says the National Society for the Prevention of Blindness, which conducted the study. The findings, however, yielded some indications that the vision of children between the ages of 3 and 6 years tends to improve during the process of growth, training and development. The girls of this preschool group had slightly poorer vision than the boys.—*U. S. Children's Bureau, Washington, D. C.*

NEW ENGLAND SURGICAL SOCIETY

FRACTURE OF THE TIBIA INTO THE KNEE JOINT*

BY PAUL P. SWETT, M.D.,† S. H. MC PHERSON, M.D.,† AND M. M. PIKE, M.D.†

An apparent increase in the incidence of fractures of the tibial tuberosities has led us to take considerable thought about the type of fractures which, when occasionally seen in former years, always was fraught with considerable apprehension because of the very common unsatisfactory functional results. Disturbances of alignment of the leg; increased knock-knee or bow-leg, limited motion in flexion or extension; abnormal lateral mobility; all too frequently occurred. It is the purpose of this paper to analyze our recent experience with these fractures and to present the methods of treatment which gradually have evolved in our practice.

As to the increasing incidence of fractures of the proximal articular head of the tibia there is considerable evidence to corroborate our impression. Cotton and Berg[1] remark: "The automobile in contact with the jay-walking citizens has brought a previously rather rare fracture type to the fore." This is in reference to what he aptly calls the "Fender Fracture" which he describes as a fracture of the outer articular surface of the tibia at the knee produced by abduction; forcible enough to mash the external tuberosity against the fulcrum of the outer condyle of the femur. Again (Steuer[2]) from an extensive study of postmortem specimens found fractures of the upper extremity of the tibia in 1/2 per cent. of the skeletons. We are unable from our own experience to present actual figures to show the relative number of these fractures, but it is a matter of surprise to find as many as 50 cases in our fracture service within the past five years. The nature and location of these fractures are presented in Table 1, together with the tables of Steuer and Crillovich for the purpose of comparison.

This distribution is of much interest and it gains further significance by the comparison.

TABLE 1

Class	*Steuer* No.	*Steuer* Per cent.	*Crillovich* No.	*Crillovich* Per cent.	*Swett* No.	*Swett* Per cent.
1. Both tuberosities (5) Inc. V-shaped fractures	4	25.0	6	25.0	9	18.0
2. Lateral Tuberosity	9	56.5	11	46.0	29	58.0
3. Medial Tuberosity	2	12.5	4	16.0	2	4.0
4. Eminentia intercondyloidea	1	6.0	3	12.5	10	20.0

*Read at the Annual Meeting of the New England Surgical Society at Boston, September 26, 1930.

†Swett, McPherson and Pike—For records and addresses of authors see "This Week's Issue", page 783.

The relatively close parallel between the percentage found in Steuer's study of anatomical specimens and our clinical studies is quite striking.

Steuer thought the age distribution was most striking, indicating as it does, that under forty years the agility of the individual usually saves him from injury. Our figures together with Steuer's are presented in the following table:

TABLE 1A

Swett

	Number of cases	Per cent.
1. Both tuberosities	3	6.0
2. External Tuberosity	29	58.0
3. Internal Tuberosity	2	4.0
4. Tibial Spine	10	20.0
5. V-Shaped fracture	6	12.0

TABLE 2

Ages	*Swett* No. (50)	*Swett* Per cent.	*Steuer* No.	*Steuer* Per cent.
10-19	4	8	0	0
20-29	1	2	1	6
30-39	11	22	0	0
40-49	8	16	2	12
50-59	14	28	6	37
60-69	5	10	5	31
70-79	5	10	2	12
Not known	2	4		

Wilson and Cochrane[3] say the injury may take several different forms, depending on the mode of production and the severity of the violence. Compression may play the predominating rôle, as in the case of a fall upon the feet; the knee being abducted or adducted at the moment of impact. One of the femoral condyles is driven into the corresponding portion of the tibial plateau and a depressed impacted type of fracture results, or a vertical separation of one of the tuberosities. In other instances lateral strain upon the knee, as from violent abduction or adduction of the leg, plays the more important part, and a triangular fragment is split off from the articular margin. Still other cases are produced by a combination of both mechanisms and occasionally direct violence may play a part. Such injuries are likely to be accompanied by considerable comminution and may involve both the inner and outer margins of the tibial plateau. A not uncommon type is the double oblique fracture of both tuberosities, resembling an inverted "V" or "Y." The integrity of the shaft is affected, and its upper end may be forced upward between the fragments with consequent lateral displacement and shortening.

The type of injury causing the different fractures in this region is eloquent of the changed conditions of modern life and readily explains the increasing incidence of these injuries.

TABLE 3

	Types of Accident	
Automobile Accidents	No. 34	Per cent. 68.0
Fall on Floor	2	4.0
Cave-in	1	2.0
Fall from a height	11	22.0
High jumping	1	2.0
Struck by a belt	1	2.0

Steuer remarks that in this era of the automobile the human knee is in a position of peculiar disadvantage for it lies at the level of the bumper, or as Cotton with delightful alliteration puts it "Fender Fracture." We are sure we don't know whether the bumper or the fenders win but we have informally used the term "automobile fracture" and the presence of 68.0 per cent. of automobile accidents in our series certainly warrants some such term to label these fractures fully as much as housemaid's knee, football knee or tennis elbow are indicative of the origin of the lesions respectively grouped under these headings. At all events it is clear that fractures of the tibia involving the knee-joint are becoming more frequent and in view of their potentially disabling character, they are becoming more important.

In our series these cases are divided into five classes as shown in Table 1A.

The distribution of these lesions resulting from automobile accidents is shown in Table 4 as follows:

TABLE 4

		No.	Per cent.
Class 1	Both Tuberosities	0	0
Class 2	External Tuberosity	21	61.0
Class 3	Internal Tuberosity	2	6
Class 4	Spine	7	21.0
Class 5	V-Shaped Fracture	4	12.

This table shows the great preponderance of fractures of the external tuberosity due to automobile injuries and further justifies the term "Fender Fracture" for this type of lesion.

The treatment of this important group of fractures seems to be on an insecure basis, which is unfortunate in view of the marked degree of disability likely to result from inadequate treatment. Traction in a suspended Thomas splint with a movable leg attachment to permit early motion is recommended by some. Manipulation and forcible impaction have been advised. This is followed by a Thomas splint for three weeks with lateral pressure pads to exert constant pressure against the displaced lateral tuberosities. Forcible compression of the displaced fragments by means of a clamp is another method of reduction followed by immobilization in plaster splints. Open methods are generally viewed askance because of the soft, spongy character of the cancellous bone which makes it very difficult to manage manually. As the result of our experience we have developed a pretty well-defined plan of reduction, fixation in immobilization which we desire to present in some detail. The end results of these methods have been analyzed and will be tabulated as graphically as possible.

Underlying all the considerations of treatment in fractures of the head of the tibia there are certain general features of great importance. A strong weight-bearing joint requires for normal motion a fairly accurate reposition of the fragments in order to secure healing with a smooth surface on the tibial plateau. Irregularities of this surface cause a limitation in, or partial blocking of, the hinge motion. Next a restoration of the normal alignment of the leg is needed, otherwise strain develops from the joint incongruity whether it be from valgus or from varus. These two primary objectives must be accomplished without additional trauma if possible, because the spongy nature of the bone does not permit the use of great leverage in the reduction. Hence the manipulation must largely rely upon the use of the strong ligaments to pull the fragments into apposition aided by judiciously applied manual compression. Harsh jamming and forcible impaction are thus to be avoided. It will readily be apparent how ligamentous pull can be used in the simple avulsions of the inner or outer tibial tuberosities. Experience has shown a similar effectiveness for this same method in the more serious longitudinal fractures even when accompanied by considerable depression of either tuberosity.

The possibility of extensive damage to the lateral ligaments is of the utmost significance in relation to the persistence of lateral instability which occasions a high degree of functional disability. The only safeguard is to securely immobilize these knees for approximately six weeks to permit this type of ligamentous damage to heal. The early movement, active or passive practised by many clinics seems to us fallacious on this account. Our position in this respect seems to be vindicated by our results. In the series of fifty cases only seven were discharged with lateral mobility and all of those came to us late. That is, none of the cases treated by prompt manipulation and immobilization had permanent lateral instability.

Except in fractures of the tibial spine open reduction with or without direct fixation is to be avoided as far as possible. In the first place reduction is not greatly facilitated by direct handling of the bone because of its spongy character. Again direct fixation with any substance whatever, is mechanically difficult and imperfect. Besides which, there is the very definite loss of the beneficent action of the ligaments as

holding or fixing forces since the opening through the ligaments temporarily ruins their capacity to pull on the fragments. We do not intend to condemn all open operations but we are firmly convinced that, except in relatively rare instances, every effort should first be made to accomplish reduction by manipulation and further that even after manipulation has failed it should be considered whether opening will be likely to give enough benefit to warrant its use.

We are aware that in some quarters it is thought that damage to the semi-lunar cartilages usually or frequently accompanies these fractures and that, on this account, many knees are opened for the double purpose of repairing the fracture and removing the injured cartilages.

FIGURE 1. Class 1. Both tuberosities. Before manipulation.

Our experience does not confirm this idea and we have seldom found occasion for operating for signs of internal derangement early or late. It is to be remembered that many cartilage injuries will not give further trouble if the knee be immediately immobilized for six weeks after the injury.

IN CLASS ONE—fractures of both tuberosities—the problem in treatment is complicated because if both fractures are markedly displaced it often is impossible to hold both in good apposition even when it is possible to reduce both of them. In some instances only one side is displaced in which event it is practical to carefully correct it and treat the case as though it were only an external or an internal tuberosity as the case may be. Our series comprises only three illustrations of this class. Two of these were treated by manipulation and one by open operation and the results are shown in Tables 6 and 7 above.

TABLE 6

RESULTS

ANATOMICAL

Class	Cases	Good Alignment	Mal-alignment	Complete Correction	Improved	Unimproved	Undisplaced
1	3	3 (100%)	—	—	3 (100%)	—	—
2	29	27 (93%)	2 (7%)	5 (17%)	11 (38%)	4 (14%)	9 (31%)
3	2	2 (10%)	—	1 (50%)	—	—	1 (50%)
4	10	—	—	2 (20%)	3 (30%)	2 (20%)	3 (30%)
5	6	3 (83%)	1 (17%)	—	4 (67%)	—	2 (33%)

FUNCTIONAL

Class	Cases	Complete Motion	Limited Motion	Lateral Mobility	?	Incomplete
1	3	3 (100%)	—	—	—	—
2	29	17 (51-5%)	9 (2.75%)	4 (12%)	2	
3	2	2 (100%)	—	—	6%	1 (3%)
4	10	3 (30%)	4 (40%)	3 (30%)	3 (30%)	—
5	6	3 (50%)	1 (16%)	—	—	2 (33%)

TABLE 7

INDUSTRIAL RESULTS

Class	Cases	Not disabled	Disabled	Unknown	Incomplete
1	3	3 (100%)	—	—	—
2	29	21 (60%)	5 (16%)	6 (18%)	2 (6%)
3	2	2 (100%)	—	—	—
4	10	7 (70%)	1 (10%)	—	2 (20%)
5	6	3 (50%)	1 (16%)	1 (16%)	1 (15%)

FIGURE 2. Class 1. Both tuberosities. After manipulation.

This table clearly indicates that this class is less hazardous than the others and probably this is due to the fact that less displacement ordinarily occurs.

FOR CLASS TWO—fractures of the external tuberosity, the most common type, the problem in reduction is to elevate the downwardly displaced fragment of the outer tuberosity and to mold it into as nearly perfect apposition as possible in order to restore the normal contour and plane of the tibial plateau. The object of immobilization is to permit healing of the fragments in the corrected position plus healing of the ligaments, without which laxity and abnormal lateral mobility are likely to result. In other words malapposition results in joint incongruity with a persistent traumatic arthritis

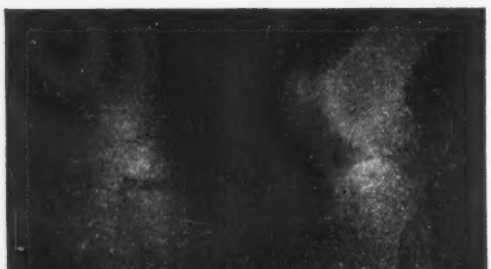

FIGURE 3. Class 2. Outer tuberosity. Before manipulation.

as the final state; and partially healed stretched ligaments cause lateral instability, weakness and marked disability. In our hands it has become customary to effect the reduction by a manipulation under general anaesthesia. The knee is first flexed to 90 degrees and then with one hand making upward and inward pressure over the external tuberosity the knee is worked back and forth once or twice and then the leg is slowly extended and bowed as sharply as possible simultaneously. In this way the external lateral ligament is put on tension and constitutes a pulling force to draw the fragment up into place which, if the varus position is maintained, in the immobilization, is a continued corrective pull during the healing of the fracture. A typical fracture of this type reduced in this manner is shown in Figure 4. Of course we have not been able to obtain a perfect reduction in all of the 29 cases by this manipulation but to show how effective it has been in our hands 22 were managed by this plan alone and four required an open procedure, the remaining three required no manipulation because they were not grossly displaced. Hence it may be seen that this method of manipulation for reduction is highly satisfactory.

Now as to immobilization it has become our custom to apply a circular plaster cast from the toes to the groin with the knee flexed about 10 or 15 degrees and bowed about as far as possible. This immobilization is maintained without interruption for six weeks and then guarded gentle weight bearing with crutches is allowed. The crutches are continued until lateral stability is secured. Massage and non-weight bearing and active movements are started after the cast is

FIGURE 4. Class 2. Outer tuberosity. After manipulation.

removed; particular attention is given to the restoration of the quadriceps extensor group. The results are shown in Tables 6 and 7.

These tables of results require little explanation since they speak for themselves. Out of a series of 50 fractures of the proximal tibial head, 29 were of the external tuberosity alone and of these, 21 were caused by automobile accident. These 29 cases were treated in accordance with the plan here outlined and 22 of these cases recovered with no permanent disability whatever.

IN CLASS THREE—fractures of the internal tuberosity our series comprises only two examples and both of these were caused by automobile accidents. In all likelihood the violence here is occasioned by the reverse process to that in fractures of the external tuberosity. That is by a forcible bowing or adduction of the leg. The treatment in this type therefore is also reversed. The leg is forcibly abducted and immobilized in slight flexion and knock-knee. The degree of the knock-knee being merely sufficient to maintain correction of the normal plane of the tibial plateau—no deformity results.

IN CLASS FOUR—fractures of the tibial spine—our series provides ten instances. Since fractures of the tibial spine often accompany other lesions and since it is generally supposed that these injuries are relatively rare, it is rather striking to observe that 20 per cent. of fractures of the tibia entering into the knee joint were of this type. The lesion usually results from avulsions by the pull of the anterior tubercle of the spine. The force is of the hyperextension variety but the lesion may result secondarily in cases of rupture of the internal lateral ligament when the external condyle of the femur is displaced mesially and breaks off the external tubercle.

The treatment here aims at overcoming the

bone block which prevents full extension of the knee and securing union of the fragment and repairing the damage to the cervical ligaments. The first is often accomplished by manipulation under an anaesthetic, the leg being flexed and

FIGURE 5. Class 4. Spinous process. Before manipulation.

rotated until full extension is possible. If this is impossible the knee may be opened by a longitudinal incision along the inner border of the quadriceps tendon, patella and patella tendon and the fragment removed.

In this event only a short period of immobilization is required. If manipulation is successful, however, then the next objective is to secure bone union by a period of six to eight weeks' immobilization in a circular plaster cast. In our ten cases six were treated by manipulation, three by open operation and one required neither procedure.

FIGURE 6. Class 4. Spinous process. After manipulation.

We have found that it occasionally is practical to suture the torn off fragment back in place and in this event it may be expected that less disability may result. This procedure is particularly valuable if the fracture is accompanied by considerable tearing off of the anterior crucial ligament because the future strength of this ligament may thus be conserved. Hence if this type of fracture is accompanied by anteroposterior instability of the knee-joint or by irreducible bone block to extension, the joint may be opened and then before removing the bone fragment it should be determined whether a better conservation of the crucial ligaments can be secured by suturing bone and ligament back in place in some manner even though the tissues are considerably lacerated. In other words it is imperative to attempt to conserve the future usefulness of the ligament and this is of even greater importance than the restoration of complete extension of the knee.

FIGURE 7. Class 5. T Fracture. Before manipulation.

Of the operative cases one showed the internal semilunar cartilage detached at its mid portion and at its anterior end, both anterior and posterior crucial ligaments were released from the tibial anchorage; a fragment of the tibial spine was broken off. We sutured back the bone and the ligaments and removed the damaged semilunar cartilage. In a second case which we first saw several months after the injury we found the external semi-lunar cartilage lacerated, a firmly united fracture of the tibial spine. There was also in this instance a marked relaxation or stretching of the external lateral ligament which allowed considerable lateral mobility and there also were three detached fragments of bone from the outer tibial head. These fragments were removed. In the third instance the anterior portion of the tibial spine with the

FIGURE 8. Class 5. T Fracture. After manipulation.

cervical attachment was loosened. The fragment was reduced and the whole sutured back into place.

The V-type fracture usually is produced by a fall from a height or by a strong twisting force. The problem here is complicated by the necessity for restoring the usual smooth articular surface to the tibial plateau and to oppose

these two upper fragments as a unit to the shaft of the tibia in such manner as not to leave any anteroposterior or lateral malalignment. Out of the 50 cases 6 or 12% were of this type. We were able to reduce all but one satisfactorily by manipulation. This was followed by immobilization in plaster for six weeks. The one operated case was of such an extreme degree of deformity that the open procedure was resorted to. The manipulation in these cases consists of strong traction, rotation, pulling the leg towards valgus and towards varus and all the time exerting manual lateral compression. It must be remembered that the soft spongy bone near the head of the tibia is readily compressed and that unlike many fracture sites where the bone edges can be levered to regain apposition, here the force must be applied by ligamentous pull or by compression.

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Discussion

Dr. James W. Sever, Boston: I had the opportunity to read Dr. Swett's paper several days ago and I have been very much impressed with his results and by his methods. I have been fortunate in having seen a number of cases of this type of fracture, perhaps not so many as he has had, and I certainly haven't had them analyzed in as complete a way as he has; neither have I treated them as well, but the impression has been, or rather the facts have been, that the results are extraordinarily good.

You can call them fender fractures or you can call them automobile fractures, but of course they do happen in other ways. In the particular series which I have reported in the past a great majority of them were due not to automobiles but to falls off stepladders, falls off stairways, to falls with twisting strains of various kinds. It was not so long ago before the days of the automobile that I reported these cases, so whether they should be called automobile fractures or fender fractures I don't know. It is, to be sure, a helpful alliterative term and they are increasing in frequency tremendously. It used to be a very rare fracture and when I first began to look them up it seemed as if it was rather a unique sort of condition, which interested me very much. Now we say, "Oh yes, that is a very common thing," and you feel as though you knew about what to do for it and about what the outcome is going to be. I don't feel so sure about it now since I have heard Dr. Swett's results.

It never occurred to me that the fracture *per se* could be reduced as easily as Dr. Swett implies. I have tried it and I have failed. If the external condyle is dropped very much it oftentimes may be impacted or jammed in its position, and it is very apt to be associated with a fracture of the head of the fibula. In spite of anything I have been able to do I have never yet been able to restore it to its normal joint surface or joint place in relation to the other condyle as well as in these x-rays which Dr. Swett showed.

In my experience the cases I have had as far as end results go—and I have seen some of them, as many as nine and fifteen years after their fracture—all of them showed a certain amount of knock-knee; all of them showed marked lateral mobility, with a good deal of instability of the knee, with the integrity and the function depending on the development and control of the quadriceps, which is very essential, depending many times on the original and primary length of fixation. I think that is one thing that Dr. Swett meant to impress upon you—the absolute necessity of not six, in my mind, but eight to nine weeks of immobilization before motion. Weight-bearing should be guarded for nine, ten, or eleven weeks.

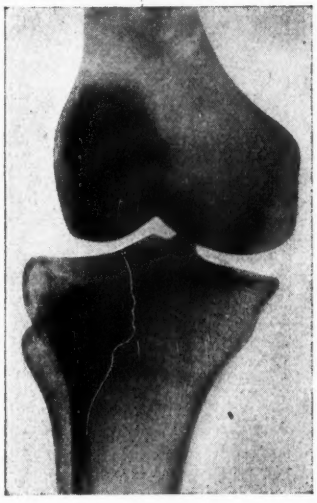
Joint fractures in the presence of synovial fluid do not heal up readily, and in the presence of a displacement of a condyle into a joint I don't think you get very firm callous, and you certainly do not get an even weight-bearing surface.

So far as motion goes, all the cases I have had have had excellent function. Sir Robert Jones advocates in the presence of loose bodies, removal at a later date of the fractured portion. I have operated only in one case, a very bad fracture which came from a fall, and not from an automobile accident, and at the time of the operation it was perfectly hopeless and impossible for me even to try to reduce or to diminish the gap or the V in the fracture in any way. I simply did what I could and I found I couldn't do anything and got out. It happened he came out with a very good knee. All of them have had excellent function, excellent mobility, but unstable knee joint.

I have several lantern slides if I may be privileged to show them.

X-ray No. 1. This is a typical automobile fracture and is the result of an automobile accident, the dropping of the external condyle without the fracture of the head of the fibula. The time I saw her (this accident happened in 1911) I knew nothing about restoring or any method of restoring the condyle to its normal relation with its fellow, and I made no attempt to do it.

The eventual result, and I have followed her since, has been a perfectly satisfactory knee joint as far as motion goes, with a good deal of lateral instability and knock-knee controlled by a lift on the sole and heel on the inside of the shoe.



X-RAY NO. 1.

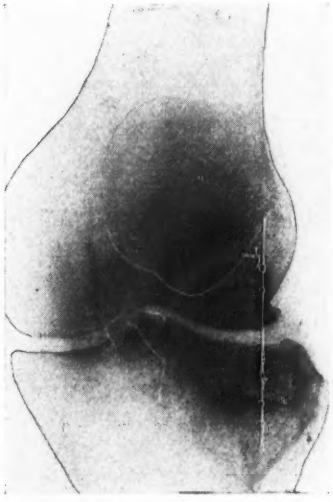
X-RAY NO. 2.

X-RAY NO. 3.

X-rays Nos. 2 and 3. Here is another one as a result of a fall downstairs, a bad fracture of the upper end of the tibia, or end of the knee joint,

X-RAY NO. 4.

with a knock-knee, but with a normal functional knee. There again you see a distortion of the outer surface of the tibia, complicated, of course, with a fracture of the upper end of the fibula. You find in many of these cases there is often



X-RAY NO. 5.

Note widening of Tibial Tuberosities Line of fracture involving spine and both Tubercles of it. Dropping of articular surface below the line of the head of the Fibula.

a backward displacement of that condyle as well as an abnormal dropping.

X-ray No. 4. Here is one involving a tibial spine, for which no treatment was carried out except a moderately long fixation, but if there had been locking there I presume it might have been necessary to go in and perhaps remove or,

if done early, to suture back in some way the spines in their normal relations.

I am not at all convinced that early operation for repair of that particular type of fracture is necessary, wise, or even efficient, and I don't think the results are as good and the risks certainly are greater.

X-ray No. 5. Here again is more the type of a fracture that Dr. Swett showed you in the film, with a dropping, a considerable dropping you see of the external condyle and not a fracture completely through. That is not through the outer condyle but oftentimes a fracture through part of the condyle with a dropping of the anterior portion. That type does not leave quite so much of a knock-knee, but the knock-knee is inevitable to a certain extent, that is, in my cases. In Dr. Swett's cases he has been able to restore the symmetry. His results have been remarkably good.

X-ray No. 6. There again is the case that I attempted to repair by driving a nail through to approximate that V fracture or splitting fracture which came from a fall, and is of the type which I think Dr. Swett spoke of, although I think he described also the fracture of the internal condyle with the driving of the shaft up between. Here again one had an extremely unstable, presumably unstable, knee, but in the end this chap in spite of my operation got an extremely satisfactory functional result with a certain amount of lateral instability. The lateral instability I assume comes from the tearing of the internal lateral ligament because of the forced adduction of the knee and the association I presume of tearing of the crucial liga-

X-RAY NO. 6.

ments, which are always extremely difficult to repair.

I am not at all convinced that an unstable knee as a result of torn crucial ligaments is a condition which needs operative correction.

PREVENTION AND CONTROL OF VENEREAL DISEASES

In discussing the important public health problem of venereal disease, Surgeon General H. S. Cumming of the Public Health Service invites attention to the fact that during the fiscal year 1930, State health authorities reported to the Public Health Service 213,309 cases of syphilis and 155,875 cases of gonorrhea. The total of venereal infections thus reported exceeded the number of cases recorded during the calendar year for any other single communicable disease, omniprevalent measles not excepted. While it may be assumed that the reporting for all notifiable diseases probably is far from complete, there is no reason to believe that cases of venereal disease are being reported any more completely than cases of other diseases. On the other hand, data obtained from prevalence studies which have been made up to the present time appear to show that the incidence of syphilis and gonorrhea in the United States probably is much higher than that indicated by the State reports. Estimates worked out from the results of these surveys place the probable number of new infections for which treatment is sought during the course of a year at more than 1,000,000.

Realizing the serious nature and tremendous extent of the venereal disease problem in this country, the Service has continued its efforts to improve methods of treatment for syphilis and gonorrhea and to stimulate greater interest in the control of these infections. Special surveys have brought to light the true prevalence of syphilis in certain population groups in several States. Demonstration projects, financed almost entirely with funds obtained from outside philanthropic agencies and from State and local sources, have been carried out under Service guidance to show what may be accomplished in the control of syphilis through the effect of treatment applied to large numbers of infected individuals in a single locality at one time.

The campaign against venereal diseases among seamen in the American merchant marine has been continued. Through the medium of weekly talks given by medical officers to patients in hospitals of the Service, thousands of men have been advised during the past two years concerning the serious nature of syphilis and gonorrhea, the danger of neglecting treatment of these infections, and the means of preventing their occurrence. Splendid coöperation has been received from the shipping industry in carrying out the plan to make prophylactic materials readily available to men on vessels.—*United States Public Health Service.*

THE USE OF BARBITURIC ACID DERIVATIVES IN THYROID SURGERY*

BY FRANK E. BARTON, JR., M.D.†

THE barbiturates have been receiving a great deal of attention in the field of anesthesia during the past year. This applies especially to the sodium salt of iso-amyl ethyl barbituric acid. There have been numerous reports made on the various uses of the drug, both of the surgical and non-surgical aspects. After studying the conclusions of the different workers, in widely separated clinics, I believe that it is safe to say that sodium amytal has its advantages in the indicated cases. There is one outstanding characteristic that causes it to predominate over other derivatives, namely, its non-toxicity, when given either orally or intravenously. Isenberger[1] has made a very comprehensive report on the pharmacological action of the drug. His work included a study of its action on circulation and respiration and the conclusions were very favorable in both instances. Isenberger also adds that there are definite indications to prove that the oral administration of sodium amytal, given with inhalation anesthesia, causes increased vital reserve and Bourne, Burger and Dreyer's[2] report indicates that little is to be feared concerning the toxic action on liver, kidney, etc. These reassuring statements are backed by the extensive clinical work of the Mayo Clinic, as reported by Lundi[3]. Other clinical reports by Zerfas, McCallum, Shonle, Swanson, Scott and Clowes[4]; and by Sise[5], place it on a firm basis.

I have used sodium amytal, intravenously, in approximately thirty-five general surgical cases and then discarded it for oral administration of the drug, using it as a "balanced anesthesia". (Lundi[6].) This series included one hundred and fifty cases of all types of abdominal surgery. When using the combination of nitrous oxide and amytal, there was a noticeable reduction in unfavorable postoperative action, especially involving the circulatory and respiratory systems. There was, also, a marked amnesia, regarding the operation, and a pleasing quieting effect.

With these characteristics in mind, we began a series of thyroidectomies, using phenyl ethyl barbituric acid (luminal), as a preoperative sedative and sodium amytal capsules, orally, for the operative proceedings.

It is generally accepted that the toxic thyroid case needs absolute rest, in bed, preceding the operation. This should be a supervised rest, in the surroundings where the operation is to take place. Here the preoperative iodine medication may be carried out most efficiently. The basal metabolism is taken at the beginning of the preoperative rest period and not repeated until after the operation. The heart action and pulse are indicators as to the fitness of the patient for operation. The above procedure will reduce the basal rate of the patient, favorably, but I believe that the same can be effected, much more quickly, by using increasingly larger doses of luminal. The entire program depends upon the toxicity of the patient. By starting with a comparatively small dosage, one-half grain t.i.d., the dosage is stepped up to two, then three grains a day. The day before operation, one grain is given, morning and noon, and one and one-half grains at night.

In our series of operations, there were three cases that required seven days preoperative treatment. Their basal rates, after twenty-four hours in the hospital, were, respectively, plus 90, 64, and 52. Two of these cases required digitalis therapy, for auricular fibrillation. The pulse rates were 160, 140, and 120. At time of operation, all pulse rates were 80 or lower. It is, therefore, needless to say that the apprehension, nervousness and dyspnea, were markedly reduced. By graduating the dose of luminal, we have never had any unfavorable symptoms develop from the use of the drug. The day preceding operation, the patients are so drowsy that they sleep most of the time, arousing only for the daily routine. It has been observed that the patients who have had a course of luminal for three days or more, are more susceptible to the amytal at time of operation. There has been no attempt to "steal" the operation, as the news of impending operation has no emotional effect, if the dosage of luminal is sufficient. The usual preoperative precautions are carried out, except for the local iodine painting of the neck. This is omitted, with the belief that the patient has a better night's sleep if the neck is free of bandaging. This bandage may have the psychological action of continually reminding the patient of the next day. The incisions have remained clean, except for the usual serous discharge through the drainage site.

The morning of the operation, two hours prior to the time scheduled, two three grain capsules of sodium amytal are given, orally. In a surprisingly short time, the patient is sleeping soundly. One hour before operation, the patient is given one more three-grain capsule, making nine grains in all. This dosage allows the patient to be placed on a carriage and moved to the operating room in a very drowsy condition. The patient is placed in an upright position on the table and approximately seventy per cent. nitrous oxide gas inhalation is started immediately. By following this routine, it is rare to find a patient who has any memory of arriving at the operating room, nor do they have any

*Read before General Surgical Staff of the Massachusetts Memorial Hospitals, on February 13, 1931.

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recollection of when the gas oxygen was instituted. The amnesia produced by amytal is remarkable. It reduces nervousness and keeps the patient in a low basal state.

The neck is prepared with iodine and alcohol and the line of incision is infiltrated with a one-half of one per cent. solution of novocain. This allows a lower per cent. of nitrous oxide to be used. Very seldom is it necessary to exceed seventy per cent. This procedure gives an opportunity of removing the gas oxygen, entirely, and allowing the patient to speak, when there is any question of laryngeal injury. When satisfied, the gas oxygen may be resumed. Following the operation, a submammary injection of normal saline is given; the patient, by this time, has recovered from the effects of the anesthesia to the extent of carrying on a conversation.

In my series of fourteen consecutive cases, ten toxic adenomas, and four simple adenomas, there has been no postoperative vomiting. Apparently the sodium amytal depresses the vomiting center. I have not encountered a thyroid storm, surgical shock, or respiratory complication.

Following the operation, the pulse rarely exceeds one hundred and twenty and is generally below one hundred.

If there is any suspicion that respiratory complications may develop, carbon dioxide inhalations are given.

Two of the cases in this series required digitalis therapy to establish a normal rhythm and one was given a course of quinidine sulphate.

The luminal medication is resumed, postoperatively, for three or four days.

The Lugol's solution is given in four ounces of milk, until the diet is solid.

PROTOCOL

A married woman, forty-nine years of age, enters the hospital with the chief complaint of excitability, nervousness, palpitation, dyspnea and weakness.

Her family and marital history are not remarkable.

Present illness—Patient has always been quite nervous, and has been a very active worker all her life. Menopause, which occurred two years ago, apparently marked the onset of patient's prevailing symptoms. Patient first noticed protrusion of eyeballs two years ago. One month ago, after nervous strain, all symptoms became exaggerated. She has lost twenty-three pounds in the last year. Noticed fullness in her neck for six to eight months.

On entrance, patient had a normal temperature, pulse 160 and respiration normal; extreme dyspnea and orthopnea, exophthalmus, coarse tremor, auricular fibrillation, edema of ankles, insomnia and extreme nervousness, with a basal metabolism of plus forty-five.

The patient was digitalized. Luminal gr. 1, and Lugol's solution drops 10 t.i.d. were given for two weeks, with absolute rest in bed. At the end of this period, the pulse had been reduced to 80 good quality, and only slight irregularity. The cardiac complications were treated by Dr. W. D. Reid. After the pulse had remained 80 for five days, the operation was contemplated.

The night before operation, the patient was given 1½ gr. luminal and prepared for operation. At seven A. M. the day scheduled, the patient received two capsules of sodium amytal, with one capsule repeated at eight A. M. The patient had absolute amnesia regarding both the transferring from the room to the amphitheatre, and the preparations in the operating room.

The operation was performed under approximately seventy per cent. nitrous oxide, supplemented with infiltration of one half of one per cent. novocain, in skin and subcutaneous tissues. A subtotal thyroidectomy was performed.

The pulse rate, during operation, remained in the vicinity of 100-114. Her color was good; bleeding was moderate; there was no respiratory embarrassment.

The pathological report of the specimen was Multiple Colloid Adenomatous Goitre (endemic).

Following the operation, one thousand cc. of saline was given submammary, while the patient was on the operating table. This is a routine measure. The patient recovered from the anesthesia immediately, with no indication of laryngeal disturbance. She showed no restlessness and was not nauseated. Patient was returned to her ward; pulse was 114, fair quality. She was placed in Fowler's position.

Lugol's solution, drops 15, was given rectally, in four ounces of milk, three times a day. For the first twenty-four hours, one ampoule of digitalone was given and morphine sulphate gr. 1/6 given as necessary. The patient had a quantity of water by mouth and suffered no vomiting. The effects of the amytal carried over until after the operation, so that only three doses of morphine were necessary; patient sleeping most of the time. After the first twenty-four hours, digitalis was given by mouth and luminal gr. 1 t.i.d. This kept the patient comfortable without apprehension. On the third day, syrup of hydriodic acid dr. 1 t.i.d. was instituted and rectal taps discontinued.

Postoperatively, the patient's temperature arose on the first day, 99.8°, pulse 120. Remained there until afternoon on the second day, when the pulse became 110. There was a steady decline and on the fifth day the pulse was 80, but irregular.

Twelve days following the operation, Doctor Reid began quinidine medication. Ten days later the pulse rate was 80 and regular. The patient left the hospital in twenty-one days, in good condition. She is to return in one month for a basal metabolism test.

In summary, I would say that—

1—Phenyl ethyl barbituric acid (luminal) is used very effectively in thyroid surgery, as a non-toxic preoperative sedative; that its use decreases the necessary rest period and increases the effectiveness of the sodium amytal.

2—The use of sodium amytal, orally, as a "balanced anesthesia", with gas oxygen, places a patient in a low basal state, by reducing apprehension and nervousness.

3—It increases vital reserve and allows the patient to be under control at all times.

4—Sodium amytal is decidedly non-toxic, it causes a marked amnesia and postoperatively, it depresses the vomiting center.

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UNDULANT FEVER

Report of a Case

BY PARKER DOOLEY, M.D.*

T. B. N., a white male, aged 14 years, was admitted to the school infirmary on November 27, 1930, complaining of stiff neck.

The boy's past history was conspicuous because of his unusually good health. Of the infectious diseases, he had had measles, German measles, pertussis, varicella, and mumps. He had never had any serious illnesses and, during the preceding two years, no illness whatever. Within those two years he had had vaccinations against smallpox and typhoid fever, and also diphtheria antitoxin. By chance he was one of a group of persons who were being tested for Brucella agglutinins in an effort to discover the incidence of such agglutinins in normal people, therefore it is definitely known that his serum was negative six weeks before he fell ill.

For about ten weeks before the onset of his illness he had been under our continuous observation as a boarding school student and had been absolutely free of any evidence of infection during this time. He was a tall, exceedingly robust looking boy, somewhat over the average weight for his size and years. His appetite had been excellent and he had been gaining weight until the time of admission. He had been drinking milk from a herd which supplied the school, but from which no other cases were reported.

On the day of onset he felt quite well until about 4:00 P. M. when his neck began to feel stiff. Other than that there was no complaint whatever when he was examined at 7:00 p. m. that same day. There had been no headache, earache, or visual disturbance; no sore throat or nasal discharge; no nausea, vomiting, abdominal pain, or disturbance of bowel motions; no cough, expectoration, or chest pain; no urinary symptoms; no chills, sweats, or joint pains.

On admission his temperature was 37.6°, his pulse 80, his respirations 24. His face was flushed but he was perfectly rational and in no apparent discomfort. The tonsils and adenoids had been removed some years before but there were some oedematous tags of lymphoid tissue in both tonsillar fossae and on the posterior pharyngeal wall. The whole pharynx was diffusely reddened. No other abnormalities were noted about the head, ears, eyes, nose, mouth, or paranasal sinuses. He said that the back of his neck ached and was tender when it was handled but no abnormality could be made out on examination. There was no abnormality of the peripheral lymph glands. The heart and lungs were normal. The abdomen was moderately distended but otherwise normal. The spleen and liver could not be felt. There was no motor or sensory disturbance. The stiffness of his neck seemed entirely subjective. The quadriceps reflexes were obtained with difficulty but the others were easily elicited. Both Kernig's and Brudzinski's signs were absent. The urine was normal. There was a leucopenia of 5,800.

On November 28, the day after the onset, the stiffness of his neck had entirely disappeared not to return. Save for a slight headache he felt quite well though his temperature rose to 38.8° in the afternoon.

On the following day he vomited several times but otherwise had no complaint except a slight headache. His pharynx remained red though his throat did not feel sore. A few râles were heard on either side of his chest at the inferior angles of the scapulae. There was no sign of consolidation. During the day his temperature rose to 39.6° but his pulse remained relatively slow. For the first time his spleen was palpable. At this stage his illness would have been diagnosed "grippe" or "flu" if it had not been known that the boy had been drinking raw milk since his negative serum agglutination test. On that account, rather than because of the nature of his illness, his serum was tested again for Brucella agglutinins and was found to be strongly positive in dilutions as high as 1:1500. Blood cultures taken at this time were thought to contain Brucella organisms but were subsequently contaminated.

On November 30 he presented essentially the same clinical picture, i.e., slight headache, failing appetite, tendency to constipation, afternoon rise in fever, relatively slow pulse rate, inflamed throat, pulmonary râles, palpable spleen, and leucopenia. The following day his spleen could be felt 5 cms. below the rib border, and was beginning to grow rather tender. There was no apparent change in his condition until December 5, when his temperature dropped to 36.2° (the first subnormal reading since the onset). That afternoon he had a brief chill with subsequent elevation to 39.6°. His pulse rate was below 80 throughout the day. The organism described below grew from blood cultures which were made immediately after the chill.

On the following day he had no chill, though his temperature swung down and up as before. Again, on December 7, he had a chill, a much more severe one, but this was his last though he had a wide diurnal swing in temperature for several days thereafter. At the end of his second week his daily peak temperatures began declining. After the end of his fourth week, he had no more elevations in temperature. With the disappearance of his fever, his appetite returned, he regained what weight he had lost (twelve pounds), and his general condition improved very rapidly. By the end of his fifth week, his spleen was no longer palpable. Eight weeks after the onset he was apparently perfectly well and he has remained so since.

The most striking feature of his course was that his fever was out of all proportion to his apparent illness. Even at its height, he was rational and fairly comfortable. In fact it was difficult to make him stay in bed at any time.

No attempt at specific treatment was made. The boy was kept in bed, given an excess of fluids and a bland diet. Symptomatic treatment was used against headache and constipation.

LABORATORY EXAMINATIONS

Blood:	11-27-30	12-1-31
Haemoglobin	90%	90%
R. B. C.	4.9 m.	
W. B. C.	5,800	4,200
Differential:		
P. M. N.	49%	23%
M. & T.	10%	12%
S. L.	36%	59%
L. L.	5%	6%

(Smears negative for malarial parasites.)

The variation in daily leucocyte count is shown in Chart I. Two months after the onset his leuco-

*Dooley—For record and address of author see "This Week's Issue", page 783.

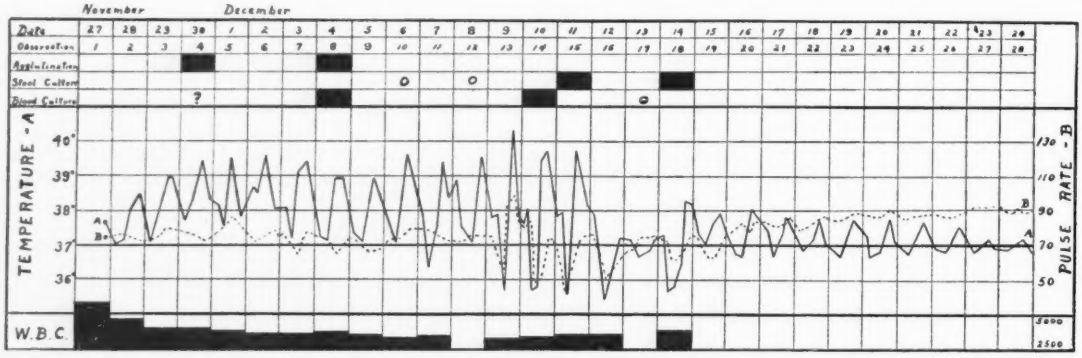

CHART I.

cyte count had risen to 10,000, and the polymorphonuclear elements had reached 68% of the total count. The behavior of the leucocytes during the day of his most severe chill is shown in Chart II.

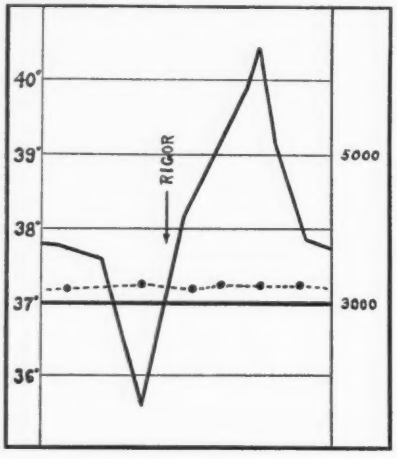

CHART II.

Showing the absence of leucocytic response during a severe chill.
Solid line: temperature.
Interrupted line: leucocyte count.

His haemoglobin decreased 10% during the febrile period of his infection but had risen to 95% two months after the onset.

Urine: There was no abnormal finding in his urine except for a trace of albumin at the height of his fever. Urine cultures were repeatedly sterile.

Throat cultures: Mixed flora with neither pneumococci nor haemolytic streptococci.

Serum Agglutinations:

11-29-30		
	typhoid	negative 1:40
	paratyphoid-A	negative 1:40
	paratyphoid-B	negative 1:40
	undulant fever	positive 1:50 to 1:1500 (Huddleson antigen)
		positive 1:50 to 1:1500 (macroscopic)
	tularaemia	positive 1:20 to 1:40, negative 1:80
12-4-30		
	undulant fever	positive 1:25 to 1:2000 (Huddleson antigen)
1-21-31		
	undulant fever	positive 1:25 to 1:6000 (Huddleson antigen)
		positive 1:25 to 1:12,000 (autogenous antigen)

Stool Examination:

12-11-30	positive for organisms of Brucella group (Amoss technique)
12-14-30	positive
1-8-31	positive
1-21-31	negative
1-28-31	negative

The organisms isolated from the blood stream were very slow in their original growth. Colonies on blood agar were barely visible after 96 hours. Subsequently they grew readily on glucose agar and on calves' liver infusion agar. The cells were tiny rods with many coccoid forms; gram negative; neither gas nor acid production in glucose or lactose broth; nonmotile. Inoculations with patient's blood or with cultures were fatal to guinea pigs in 3 to 4 weeks. The bacteriologists of the Connecticut State Board of Health also isolated this same organism from the patient's stools and from the spleen of a guinea pig inoculated with the patient's blood.

RUPTURE OF A CORONARY ARTERY, HEMOPERICARDIUM

Report of a Case and Review of the Literature*

BY CHARLES T. OLCOTT, M.D.†

THE case to be presented is one of rupture of the circumflex branch of the left coronary artery, unassociated with aneurysm, with resulting hemopericardium. The etiologic factors seem clearly atheroma and hypertension.

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The patient, who was under the care of Dr. Lewis A. Conner, was a man of 60 (N. Y. H. No. 6994). He had had early tuberculosis in 1915 but became entirely symptom-free some time later and had no other illnesses. There was a negative venereal history and he did not use alcohol or tobacco. His general health had been excellent when, in June 1927, he developed a retinal hemorrhage. At this time he had slight dyspnoea but never had any precordial distress. He was overweight, his heart was enlarged and the arteries were thickened and tortuous. The blood pressure was 190/140. Wassermann was negative. An

electrocardiogram showed no abnormal findings except marked left axis deviation. Since this time he has been leading an active life, swimming and tramping and going to work regularly. At 2 P. M., September 2, 1930, while at his office, he had a sudden severe pain above both clavicles, which was persistent but not very intense, and there was some sweating and pallor. When seen by Dr. Conner at 3 P. M. and at 9 P. M. (after admission to the hospital), the heart was regular, strong and slow (40-45). There was a loud systolic murmur and also a diastolic murmur, like that of aortic insufficiency. No such murmur had been heard before. The picture was that of an attack of coronary thrombosis and the patient did not seem very sick. At 5 A. M. the following morning, the pain increased and the patient died suddenly. The duration of symptoms was 15 hours.

Autopsy was performed 5 hours later. Inspection showed a heavy, large man with barrel-shaped chest, but no other positive findings. Permission was granted only for examination and removal of the heart and incision was made in the lower thorax. The lungs showed nothing of note except emphysema and the other organs could not be explored.

The pericardium appeared as a hollow, transparent sac, 16 cms. wide, which was bluish, as if containing blood. On opening it about 400 cc. of fluid and clotted blood was found. The external surface of the pericardium was clear and shiny, as was also the inner surface of the parietal pericardium except at the point of reflexion. The epicardium covering the ascending aorta and adjacent portions of the base of the heart (involving about one-quarter of the heart's area) was a uniform dark red in color, and showed evidence of interstitial hemorrhage. The three-quarters of the epicardium surrounding the apex of the heart showed no injection and were of normal color. There was no evidence of opacity or fibrinous exudate at any point.

The heart was enlarged and weighed 600 grams. It was 13 cms. wide and 16 cms. from the tip to the aortic arch. The wall of the left ventricle was obviously thickened, being 1.5 cms. in diameter. The right ventricular muscle was of about the usual thickness. No area suggesting infarction was found. The muscle was somewhat pale, but otherwise natural. The tricuspid and aortic valves seemed competent and normal, as did also the mitral, except for some atheromata on the latter. The aortic leaflets seemed competent. There was no suggestion of a vegetation on any valve or in the mural endocardium. The foramen ovale showed an opening 3 mms. in diameter in its lower edge, but this was covered by the surrounding folds and it was thought to have been physiologically closed. The first portion of the arch of the aorta, which was all that we could examine, showed moderate atheromatosis, but no striation. The coronary vessels were both opened completely. They showed no narrowing; in fact, the descending branch of the left seemed slightly increased in diameter throughout. There were moderately large areas of atheromatous plaques throughout. In the circumflex branch of the left coronary, the origin of the first small branch was surrounded by an exceptional amount of lipoid degeneration. A small probe was passed through this and approximated the point of maximum hemorrhagic discoloration seen through the epicardium. This was considered as the probable point of rupture into the heart wall. (The cross section of the circumflex branch of the left artery as seen in the picture was made for histological examination, the actual point of rupture being pin-head in size.) The point of communication between the interstitial hemorrhage in the heart wall and the pericardium cavity itself was thought to be another pin-point area about a centimeter posterior to the ruptured vessel.

Microscopical sections showed atheromata of the circumflex branch of the left coronary, but no point of rupture was recognized in the section. The other coronary vessels showed the same picture. The elastic laminae seemed intact. No grouping of round cells around the vasa vasorum or other picture suggesting syphilis was found. The notable finding was the hemorrhage in the subepicardial tissues. The histological section of the heart muscle showed nothing significant.

From the clinical and autopsy findings, it is thought possible that the rupture into the heart wall may have antedated that into the pericardial sac by some time. Kaufmann[1] states that "the time of death (in hemorrhage into the pericardium) depends on the kind of opening through which the blood escapes." In our case, the small opening might, perhaps, be correlated with the 15 hours of life after the rupture.

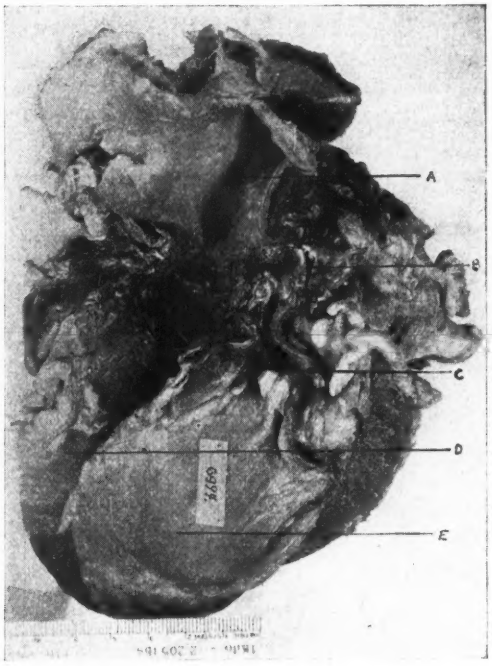

FIGURE 1. Heart as viewed from in front and slightly to the left:—A, aorta. B, point of rupture of circumflex branch of left coronary artery. (Rupture was of pin-point size, the transverse incision was made for microscopical study.) C, descending branch of left coronary artery. D, anterior interventricular septum. E, left ventricle.

The coronary branch involved seems somewhat unusual as atheromata of the descending branch of the left artery is more common than that of the right coronary and involvement of the circumflex branch of the left is the least frequent of the three (Wolkoff[2]).

LITERATURE

The above case suggested a review of the literature and our findings are thought to indicate the approximate number of cases reported and indexed as rupture of a coronary vessel. However, there are undoubtedly many cases not so listed, as, for instance, the cases referred to by Allbutt[3], and numerous others dating back as far as Morgagni[4]. The cases of rupture of the heart are numerous, and some of them may well include rupture of a coronary artery, but these are not apparent. Several reviews have been studied without noting any (Davenport[6], de la Chapelle[7], Krumbhaar and Crowell[8], Nuzum[9]). Kaufmann[1], loc. cit., says that hemoperi-

cardium arises "quite rarely from aneurysms of the coronary artery". Such cases of ruptured vessels as occur in rheumatic pericarditis (Géraudel[10]) or xanthomatous pericarditis (Melnikow-Raswedenkow[11]) and, even more clearly, a coronary lesion secondary to an abscess rupturing into a coronary vessel (McLagan[12]) seem irrelevant; as does Lewis'[13] Case III, where coronary thrombosis and succeeding fibrous replacement surrounded the ruptured vessel. Traumatic cases are not considered. For purposes of tabulation we have also omitted two cases of hemopericardium reported by Tschermak[14] and Ehrhardt[15] respectively, as these cases are both described as aneurysms of the aorta associated with tearing off, rather than rupture of, the right and left coronary arteries respectively at their origins.

We have tabulated 31 cases of rupture of one (or both) coronary arteries. Of these 16 cases are unassociated with aneurysm while 15 are due to ruptured aneurysm. Five cases seem to be of infectious embolic origin, two due to lues, and fourteen to atheromatosis. In the remaining ten the etiology is not clear.

Embolic infection without aneurysm: In a case of embolic infection without aneurysm, reported by Harlan[16], the left artery is involved in a man of 22.

Embolic infection with aneurysm: Four patients show aneurysmal dilatations of infectious origin. Of these, one is in the right artery, a man whose age is not stated (Bougon[17]). Two men and one girl show multiple aneurysms of infectious embolic origin involving both vessels. Of these Heuse[5] reports a man of 21 with five aneurysms, one of them (on a branch of the left coronary) rupturing; Ogle[19] reports a man of 26 with three, one (on a branch of the right) rupturing. In Clarke's[20] case, a girl of 10 had a "dozen" aneurysms and the etiology seems clearly embolic. The average age of the four cases (one other not given) is 19.2 years.

	NO ANEURYSM					ANEURYSM					
	R.	L.	NOT STATED	BOTH	TOTAL	R.	L.	NOT STATED	BOTH	TOTAL	GRAND TOTAL
INFECTION, EMBOLISM (5)											
M.		22			1	#			21 26	3	4
F.									10	1	1
LUETIC (2)											
M.					0	60				1	1
F.					0	32				1	1
ATHEROMATOUS (14)											
M.	50 58	60 78	40		5	63	73 77	#		4	9
F.	73 80	58 60 76			5					0	5
ETIOLOGY NOT CLEAR (10)											
M.		30	34 #		3		5	40		2	5
(?)								#		1	1
F.		75	78		2			##		2	4
	4	8	4	0	16	4	3	5	3	15	19M. 11F. 1?

- Age not known.

ANALYSIS OF 31 CASES OF RUPTURE OF THE CORONARY VESSELS

The numbers in the table, except the totals, indicate the age of each patient. When the age is not noted, the presence of a patient in the given group is indicated by a #.

Luetic without aneurysm: No cases reported.

Luetic with aneurysm: The two definitely luetic cases both showed aneurysmal dilatation, and in both the right coronary was involved. Packard and Wechsler[21] describe a man of 60; Martland[22], a negress of 32. (In the latter case there were two openings of the right coronary artery into the sac.) Average age of the two cases, 46.

Atheromatosis without aneurysm: In the following 14 cases, fairly definite atheromatosis was noted in the protocol. Lilly[23] and Jones-Evans[24] note men of 50 and 58 respectively with rupture of the right coronary artery without aneurysm, while the same lesion is described in women of 73 and 80 by Ahern[25] and Kalyanvala[26]. In the left artery there are five similar cases in men of

60 (our case) and 78 (Edwards[27]); and women of 58 (Humphrey[28]), 60 (Osborne[29]), and 76 (Conder[30]). In Kesteren's[31] case, in a man of 40, the artery involved is not stated. These ten cases without aneurysm are equally divided as to sex. The men had an average age of 57.2 years, the women 69.4, while the age of both together was 63.3.

Atheromatosis with aneurysm: The four patients with ruptured aneurysms in presumably atheromatous cases were men and the average age of the three in whom this is given is 71. They are found in the right artery in a man of 63 (Crisp[32]), in the left in men of 73 (Sommer[33]), and 77 (Peste[34]) respectively. A man in whom the age and side of involvement is not stated is described by Wood[35].

Of the entire 13 atheromatous cases of known age, the average age of the eight men is 62.3, of the five women is 69.4, of both 65.

Undetermined etiology without aneurysm: Of the last group, those of undeterminable etiology, Clark[36] describes a man of 30, and Batterham[37] a woman of 75 with rupture of the left coronary. Two men, one 34 and one of unknown age, and a woman of 78 are described by Youl[38], Fisher[39] and Kramer[40] respectively, with the side involved not stated. In the above, no aneurysm is noted. The average age of the four in which the age is given is 54.2 years.

Undetermined etiology with aneurysm: Of ruptured aneurysm one case is noted in a male of 5 in the left coronary (Malet[41]). There were aneurysms in an unidentified artery in a man of 40 (Hedland[42]), a person of unstated sex and age (Sabine[43]), and two women, age not given (Markoe[44] and McRae[45] respectively).

The average age of this aneurysmal group is 22.5 (2 cases), of the entire group of undetermined origin 40.3.

To recapitulate, the average age of the embolic group was 19.2 years (4 cases); of the luetic 46 (2 cases); of the atheromatous group 65 years. The fourth group (of undetermined etiology) 54.2. The right artery, or one of its branches, was involved in four cases without and in four with aneurysm. The left, or a branch, was involved in eight without and three with aneurysm. In all, the right was involved eight, the left eleven times. Both were involved in three, all of embolic origin.

SUMMARY

1. A case of a man of sixty is presented with pericardial hemorrhage following rupture of the circumflex branch of the left coronary. There was an interval of 15 hours between the initial symptom, of precordial pain, and death. Atheroma was considered the causative factor.

2. Thirty-one cases of rupture of a coronary were found in the literature (including this case). Of these sixteen were not apparently associated with aneurysm, while in fifteen aneurysm was found.

3. The etiology of the rupture seems to have been atheromatous in fourteen cases (ten without aneurysm); infectious embolism in five (four with aneurysm); and lues, both with aneurysm, in two. In ten the etiology is not clear.

4. The sex distribution was: males, 19; females, 11; not stated, 1.

5. The average age of the atheromatous patients was 65; of the infectious 19.2 years; and of the luetic 46.

6. Rupture occurred in the left artery eleven times, in the right eight, in both three times. (Artery not stated in 9.)

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THE DIAGNOSIS OF CONGENITAL DEFECTS OF THE HEART*

BY WILLIAM D. REID, M.D.†

THE diagnosis of congenital cardiac disease requires differentiation from acquired disease of this organ. The congenital type can usually be distinguished by the following characteristics: (1) the youth of the patient; (2) a history of symptoms originating in early childhood or in infancy, and of the absence of any event, as rheumatism, chorea or endocarditis, which could have induced acquired cardiac disease; (3) cyanosis, when present, and the symptoms associated with it; (4) the presence of atypical physical signs. In my experience, if the patient be not very young, the fourth point is the most valuable.

The determination of the particular defect in the heart is more difficult. There are so many kinds of lesion, often several combined in the same patient, and the symptoms and physical signs are subject to so much variation that it often seems impossible to make an accurate diagnosis of the defects present. The study of such careful articles as that of Maude E. Abbott[1], excellent though they are, leaves one in confusion as regards the diagnosis. A later article by Dr. Abbott[2] has been much improved, in my opinion, by the insertion of summaries of the diagnostic features after the extensive descriptive text devoted to each of the congenital defects.

It was believed possible that the arrangement of the data in tabular form,—the defects on one side and the detailed symptoms and signs in an adjacent space,—might lessen the confusion and indicate the probable diagnosis. The attempt to do this has convinced me that such a hope is Utopian, as the resulting table is not so simple as was desired. However, there are ten of the congenital cardiac defects which when they are not associated with other lesions, can often be correctly diagnosed in the living patient. The accompanying table may facilitate the diagnosis of this group of anomalies. If one looks along the margin in which various symptoms and signs are listed, one may then readily find in which cases they occur.

It is emphasized that of necessity the table is applicable mainly to the typical and uncomplicated cases of this group of congenital defects of the heart. If use of the table indicates the probable diagnosis, the physician can then turn to a suitable textbook and decide if the more complete description given therein supports or refutes the diagnosis indicated in the table.

There are two additional congenital cardiac lesions which usually are diagnosable clinically. Congenital heart-block is recognized by the abnormally slow cardiac rate; sometimes attacks of syncope occur. An electrocardiogram offers a means of confirming the clinical diagnosis. Dextrocardia is recognized by clinical examination, the roentgen findings, and, if the mirror image type be present, by the inversion of all waves in lead I of the electrocardiogram.

SUMMARY

The descriptive literature pertaining to the symptoms and signs of congenital heart disease is necessarily so lengthy that the reader's mind is prone to become confused.

There are ten of the numerous congenital defects of the heart, which, when occurring in a pure form, or unassociated with other developmental defects, usually may be accurately diagnosed.

The data pertaining to the diagnosis of these ten diagnosable defects are offered in tabular form as an aid in their preliminary recognition and differential diagnosis.

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STUDIES IN FAT METABOLISM. III.
NEW PROCEDURE FOR THE ISOLATION AND QUANTITATION OF THE TOTAL FATTY ACIDS IN SMALL AMOUNTS OF BILE*

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THIS communication is a description of procedures for extracting the lipids from small amounts of bile, their isolation and quantitation. The present status of the knowledge of the biliary lipids is summarized by Whipple[1] as follows: "Soaps and fats are always reported as present in chemical analyses of bile. In many analyses we find the ether extractions lumped together. We know of no experimental observations to give information as to normal or abnormal fluctuations in the fat or soap content of bile. Few if any suggestions as to the source of such substances have been made by the workers in this field. We may conclude that our

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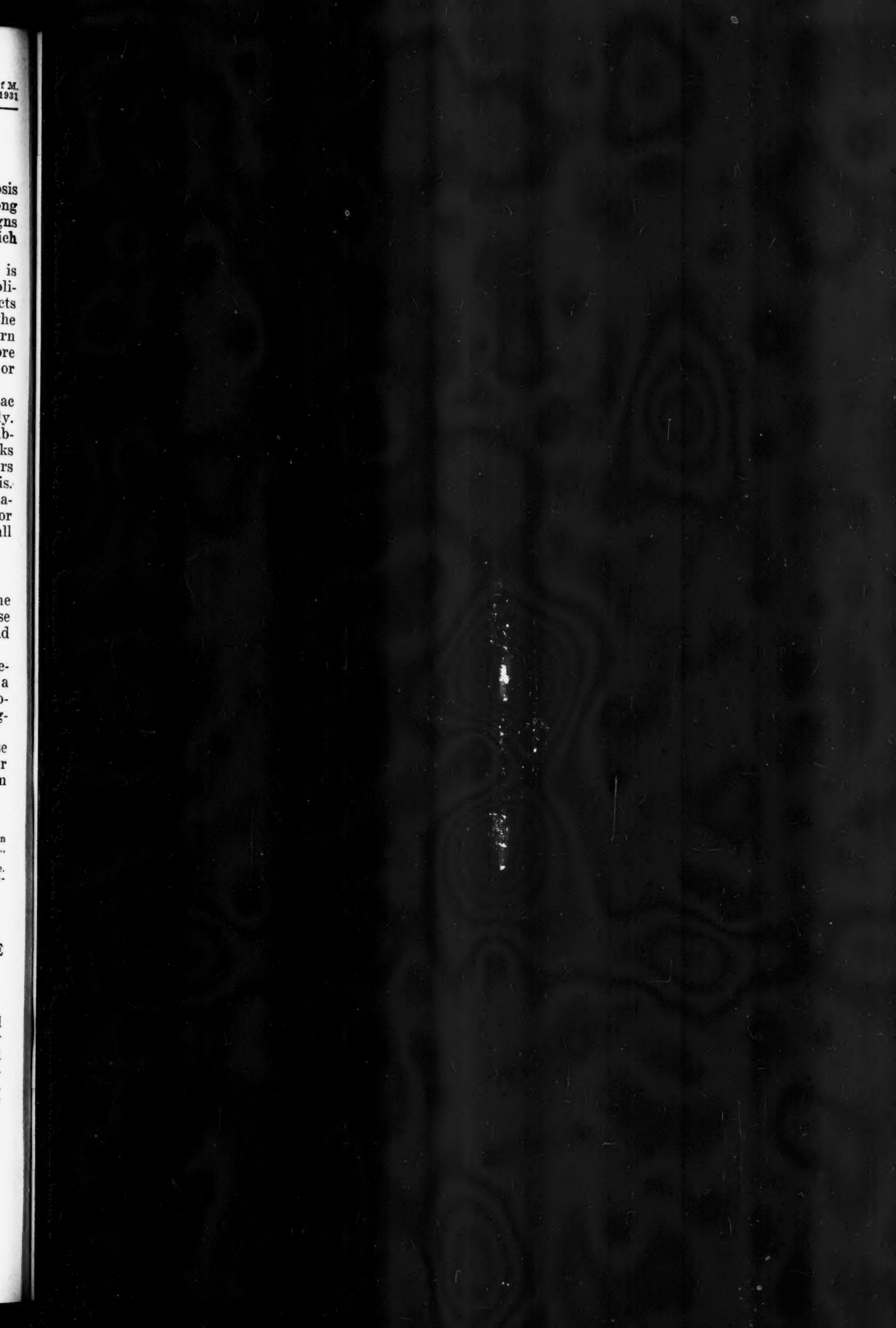


Lesion	MURMURS																	THRILL		P_2		
	Systolic														Diastolic							
	Point of maximal audibility					Transmission	Quality							Other features	2nd and 3rd left i.c.s.	Other features	Presystolic or late diastolic	Systolic	Diastolic	Accentuated	Weak or absent	Variable
	2nd left i.c.s. and above	2nd and 3rd left i.c.s and nearby	3rd and 4th left i.c.s.	2nd and 3rd right i.c.s.	left sternal border and maximal in back		Harsh	Rumbling	Machinery	Rasping	Blowing	Very harsh	Variable	Prolonged								
Usually cyanosed Pulmonary stenosis	+					Diminished or absent at apex, not audible in back	+							sometimes inconspicuous				+			+	
2. Septal defects (when complete)	See 5 and 6														See 5 and 6							
3. Complete transposition of arterial trunks																				+		
Cyanosis absent, transient or terminal 4. Patent ductus arteriosus	+					Back and sometimes neck		+	+	+				Beginning at end of systole and often continuing throughout cardiac cycle	+	Hum transmitted somewhat toward apex		Sometimes	Sometimes	Usually		
5. Septal defect Auricular		+ 3rd left i.c.s.				Anterior chest and left back		roaring, confused						Inconstant, may vary with change of position		Rare	+ may combine or alternate with systolic			Usually		
6. Septal defect Ventricular (Maladie de Roger)			+ and back			Not to axilla or neck	+							+				+				
7. Pulmonary stenosis, dextroposition of aorta and defect of interventricular septum (Tetralogy of Fallot)		+ some variation, rarely absent				Neck sometimes over precordium		+		+	+			+	Sometimes			+		Rare	+	+
8. Defect of aortic septum (aorta to right ventricle)		+				Precordia and thorax	+							+	+	Powerful		+ marked	Sometimes	+		
Cyanosis entirely absent 9. Subaortic stenosis				+		Neck						+		Persistent, from early life				+				
10. Coarctation of aorta					+								+	Sometimes post-systolic sometimes absent.								

The abbreviation "i.c.s.", used above, indicates intercostal space.

DIAGNOSIS OF CONGENITAL DEFE

		THRILL		P_2	
	Presystolic or late diastolic	Systolic	Diastolic	Accentuated	Weak or absent
		+			+
E					
				+	
trans- ed some- toward		Sometimes	Sometimes	Usually	
	+ may combine or alternate with systolic			Usually	
		+			
		+		Rare	+
rful		+ marked	Sometimes	+	
		+			

AL DEFECTS OF THE HEART

P_2			Enlargement of Heart	Roentgen	Dyspnea without Cyanosis	Duration of life		Miscellaneous	Differentiate Murmurs From	General Description
Accentuated	Weak or absent	Variable				Short	Adult often			
	+		Right sided				Sometimes	Often combined with No. 4	No. 4	Harsh systolic murmur and thrill in upper precordia, absence of accentuation of P_2 Cyanosis marked but sometimes not so until after puberty.
						Hours to days.	0			
+			Right always, left often but less			Not over six weeks, usually.				Marked cyanosis. Dullness to right of sternum, P_2 accentuated, absence of murmurs or thrill in young child.
Usually			Inconstant	Differentiates dilated pulmonary artery from retracted lung	Often		+	Occasionally paralysis left recurrent laryngeal nerve	Nos. 1 & 8	Harsh, rumbling, or machinery-like murmur beginning in late systole and continuing throughout cardiac cycle, and thrill over upper precordia. Murmur transmitted to back. Diastolic murmur sometimes. P_2 usually accentuated. Abnormal area of dullness in 1st and 2nd left i.c.s.
Usually			Right sided often	Pulmonary arc prominent. Right sided enlargement	Often		+	Parodoxical embolism	Nos. 7 & 8	Roaring. Systolic and presystolic murmurs combined, varying with change of position, in 3rd left i.c.s. Accentuated P_2, weak aortic sounds.
					Often		+	Often but few symptoms	Nos. 5, 7, 8	Constant, loud, harsh systolic murmur and thrill in 3rd and 4th left i.c.s and back in healthy young adult.
Rare	+	+	Right, constant	Prominence of pulmonary arc. Small left and big right ventricle. Broadening of aortic shadow to right. Coeur en sabot.			+	Common Pulmonary tuberculosis often	Nos. 5, 6, 8	Harsh, prolonged systolic murmur and thrill in 2nd left i.c.s., transmitted to neck. Enlarged right heart, prominence of pulmonary arc. P_2 usually weak or absent.
+							+		Nos. 4, 5, 6, 7	Prolonged systolic murmur, or continuous with systolic and diastolic accentuation, and accompanying thrill with maximal intensity at 2nd and 3rd left i.c.s. Lower down and closer to ear than machinery murmur of patent ductus arteriosus. Sometimes sudden in onset following physical strain in person previously well.
			Left ventricle usually				+	Cardiac insufficiency absent-normal pulse.		Strong, young adult with very harsh, systolic murmur and thrill in 2nd and 3rd right i.c.s. transmitted to neck and persistent since early life without other signs of obstruction to blood through aortic valve and no symptoms.
			Often absent	Abnormal aorta lower border of ribs sometimes wavy.			+			Collateral vessels. Murmur and thrill in cervical arteries. Blood pressure much higher in arms than in legs.

ignorance on this subject is 100 per cent." In view of the established importance of bile in the bodily economy, the statement of Whipple is little short of astounding.

Perusal of data on the functions of bile, such as those presented by Whipple[1], Mendel[2], and Fox[3], and studies of the functional activities of the liver as correlated by Fischler[4] shows that bile is not only an excretion but also a secretion. This finding indicates that the character of the bile is partly dependent on the functional state of the liver. The actual confirmation of this was accomplished by the studies of McClure and coworkers[5] and those of LeCount and Long[6]. The former investigated the chemical composition of duodenal bile in health and disease. LeCount and Long compared the lipid content of fatty livers with that of the bile from their homologous gall bladders. The results of these investigations demonstrated that changes in the functional state of the liver were accompanied by modifications in the composition of the bile. The observations of Mann[7] that pigments are partly formed outside the liver, of Whipple[8] that the concentration of pigment excreted in the bile is influenced by the nature of the animal's diet, and of Sinclair[9] that the character of the lipids in the liver is modified during intestinal absorption of fats all suggest that composition of bile may be influenced by various phases of extrahepatic metabolism. Correlation of all this data shows that the character of bile is apparently influenced by both intra- and extra-hepatic phenomena. This finding suggests that the study of the lipids of the bile may furnish knowledge of the functional state of various phases of both endogenous and exogenous metabolism. The potential importance of such knowledge in clinical medicine is the reason for the present investigation of the biliary lipids.

Various investigators have published reports on the analysis of bile for its lipid content. The classic method is that of Hoppe-Seyler[10], who described procedures which have been used by the majority of investigators[11]. Essentially the method consists of the extraction of bile with ethyl alcohol, concentration of the extract, and the precipitation of the bile acids by the addition of a large excess of ethyl ether. The supernatant alcohol-ether solution contains mainly soaps, fats, phospholipins and cholesterol. After evaporation to dryness the fats, phospholipins and cholesterol are extracted with pure ethyl ether, leaving the soaps in the residue. However, while this residue admittedly contains substances other than soaps, its weight is accepted as the soap content of bile. The ethereal solution of lipids is evaporated and the residue weighed. It is then saponified and dried. The resulting residue contains soaps, cholesterol, phosphorus derived from the phospholipids, pigments and other substances. After mixing this residue with water its cholesterol content is quantitated by extracting it with ethyl ether, drying the ethereal extract and weighing. The residue from which the cholesterol has been extracted is dried and ashed. The phosphorus content of the ash is determined and from the weight of the phosphorus thus obtained the phospholipid originally present is calculated. The weight of phospholipid and of cholesterol subtracted from the weight of the original ethereal extract is assumed to be the fat content of bile. Hoppe-Seyler admits that none of the procedures described give entirely accurate results. However, when working with relatively large amounts of bile, the results obtained would probably be approximately accurate. It must be admitted that they are the most adequately described methods for the fat analysis of bile which have been reported in the last 40 years.

Gautier[12] modified the Hoppe-Seyler method by extracting cholesterol and fatty substances with CS_2 from an alcoholic solution of bile, evaporating the CS_2 and extracting the residue with petroleum ether. In view of the relative specificity of petroleum ether[13] as a fat solvent, the principle of the method is correct. Jacobson[14] modified Hoppe-Seyler's method by allowing the "palmitic" and "stearic" acid soaps to crystallize out from a concentrated alcoholic extract of bile and then separating the oleic acid as the barium soap. However, he gives no data proving the constitution of the precipitates. Neither he nor Gautier furnish experimental data as to the reliability of the methods they propose. Rosenbloom[15] used Hoppe-Seyler methods for the soaps, fats, and "lecithin" and those of Windaus for cholesterol. One investigator[6] merely states that he used the method of Kumagawa and Suto[13], while another[16] states that the "charcoal method was chiefly used". Kumagawa and Suto[13] presented extensive investigations on the methods for obtaining fatty substances from tissues and on their quantitation. However, they made no observations on bile. The reader can only surmise as to how their procedures were applied to bile analysis.

In the more advanced state of knowledge of bio-chemistry Hoppe-Seyler's[10] method for the analysis of bile cannot be considered satisfactory for accurate determinations. However, it is almost the only one the status of which has been established, for no attempt has apparently been made to ascertain the reliability of other methods. For this reason the accuracy of the methods reported by various observers for analysis of bile lipids can only be surmised. Nevertheless, such results fulfill the important function of demonstrating the presence in bile of relatively considerable quantities of material in chemical combinations with fatty acids.

Before attempting to partition the various chemical combinations of fatty acids in bile, it is obviously necessary to develop means for controlling the quantitative accuracy of such partitioning. A method permitting the accurate

quantitation of the total fatty acids in bile furnishes one important control and is one reason for developing the present methods. The experimental findings involved in their development are briefly outlined as follows:

It was found that the various solid constituents of bile often could not be quantitatively separated from each other by the use of differential solvents. The failures were due to the fact that bile is a complex mixture of such physico-chemical nature that it holds in aqueous solution substances usually insoluble in water. Consequently, the usual differential solubilities of the solid constituents are frequently altered. Even drying bile by evaporation or certain other means does not materially change this characteristic. Furthermore, frequently no means were available for determining whether the extraction of qualitatively unchanged lipids was quantitative. These difficulties caused the abandonment of attempts to isolate the various lipids from bile in an unchanged state.

Extraction of the total fatty acids after saponification of the biliary lipids was next investigated. Saponification of whole bile is complicated by the presence of an unduly large amount of residue when the saponified material is concentrated and this interferes with its extraction. For these technical reasons the filtrate of an alcohol-ether extract of whole bile was made, the ether evaporated and saponification produced by boiling with sodium hydrate in alcohol. The quantitative recovery of the fatty acid fraction of the soaps of the saponified material and their separation from pigments, bile acids, cholesterol and other substances presented many difficulties. On the addition of carbon disulphide, petroleum ether, ethyl ether, chloroform, carbon tetrachloride and other low boiling fat solvents to the saponified residue, gummy clumps containing fatty acids were formed, which were relatively impervious to these solvents. However, the addition of hot water to the saponified residue caused the gummy clumps to liquefy and float on the surface of the water. They could then be extracted with hot toluol, kerosene and fractions of gasoline of relatively high boiling point, with benzene as the most satisfactory solvent. The benzene extract of fatty acids possessed the advantage of boiling quietly and thus evaporated rapidly. Also, this extract did not cause the fatty acids to creep up along the walls of the beaker during drying, as so often happens with solvents of lower boiling points. The procedure finally adopted was to acidify the saponified material with a volatile acid, i.e., HCl, heat and extract by shaking with hot benzene and decanting the benzene extract. The resultant extract contained fatty acids, cholesterol, some pigments and possibly other substances. The residue from this extract did not give the Pettenkofer reaction for bile acids. When it was oxidized, no precipitate was demonstrable on addition of barium chloride. This finding showed the absence of sulphuric acid, which would have been formed from the sulphur if taurocholic acid had been present. It was found that benzene did not dissolve demonstrable amounts of commercial preparations of either taurocholic or of glycocholic acids. From these findings it was concluded that the benzene extract of saponified bile did not contain bile acids.

The residue left after drying the benzene extract described above was found suitable for extraction of its fatty acids with petroleum ether, which is the most specific fat solvent known[13]. The petroleum ether contained fatty acids and probably cholesterol, but no pigments demonstrable by the usual chemical tests. The fatty acids and cholesterol were separated by saponifying the petroleum ether extract and dissolving out the cholesterol with cold chloroform. The soaps remaining were acidified and the fatty acids extracted with petroleum ether the boiling point of which was below 48° C. Carrying through all these procedures with known amounts of pure fatty acid demonstrated that they can be executed with quantitative accuracy.

Two procedures were used for estimating the amounts of fatty acids. One was the oxidation method worked out by Bloor[17], the other was a neutralization method. The latter consisted essentially of titrating an alcoholic solution of the fatty acids with N/100 alcoholic solution of sodium hydrate, using alphanaphtholphthalein as an indicator. Of all the available indicators this one gave the sharpest end point. The N/100 alcoholic sodium solution was made fresh each day by diluting an approximately tenth normal solution of sodium hydrate and determining its normality by titrating against N/100 sulphuric acid solution freshly prepared by diluting a standard acid solution of known normality.

The reagents used are 95 per cent. ethyl alcohol, ethyl ether, benzene, petroleum ether, the indicator alphanaphtholphthalein, sodium hydroxide, hydrochloric acid, sulphuric acid, silver dichromate, potassium dichromate, potassium thiosulphate, potassium iodide and starch. The alcohol, ether and petroleum ether are redistilled before using. The petroleum ether fractions are distilled below 48°C. The benzene is the "thiophene free" C.P. preparation. The indicator is 0.8 per cent. solution of alphanaphtholphthalein in redistilled 95 per cent. alcohol. Saturated aqueous sodium hydroxide is used for saponification. A stock solution of N/10 alcoholic NaOH is also prepared. An approximately N/10 HCl solution in water is made and its normality determined by titrating with sodium hydroxide solution of known normality. In this titration the alkali is run into the acid and alphanaphtholphthalein is used as the indicator. The normality of the sodium hydroxide solution is determined by titrating with an N/10 oxalic acid solution in water, in the conventional man-

ner. A mixture of equal volumes of distilled water and concentrated C.P. HCl is used to acidify the saponified residues. The sulphuric acid solution of silver dichromate, the solution of potassium dichromate and of potassium thiosulphate are prepared as directed by Bloor[17].

METHOD

Ten cc. of bile are pipetted into a 100 cc. volumetric flask, containing about 70 cc. of equal parts of redistilled alcohol and ether, mixed, and the volume made up to 100 cc. with more alcohol-ether mixture. The contents of the flask are thoroughly mixed, allowed to stand about five minutes, then filtered into a narrow-necked glass-stoppered bottle and tightly stoppered. The volume of the precipitate is so small as to produce a negligible error. Ten cc. of the filtrate usually suffice for a determination and are pipetted into an Erlenmeyer flask of 50 cc. capacity. The ether is then evaporated by heating the flask on the steam bath, after which about 10 cc. of redistilled alcohol and 0.5 cc. of the saturated aqueous NaOH solution are added. The mouth of the flask is covered with a watch glass, the contents boiled quietly on the steam bath for 30 minutes and then the alcohol evaporated. The resultant residue is a mixture of brown and white material usually moistened with a few drops of water. The remaining water may be evaporated by means of the vacuum desiccator; in which event the benzene extract will be colorless, or nearly so. However, it is not necessary to dry the residue completely if the neutralization method is used, but it should be so dried for the oxidation method. After evaporation of the alcohol, the residue is moistened with a predetermined amount of HCl solution, which represents 0.25 cc. more of the acid solution than that quantity necessary to neutralize the 0.5 cc. of NaOH solution originally added to produce saponification. Then sufficient water is added to make the total addition of liquid equal to about 1.5 cc. The acid solution is then mixed with the saponified residue by gentle rotation of the flask and heated on the steam bath until the brown colored material described above floats on the surface of the water in a liquid state. This phenomenon requires but little heating to produce. To the flask are now added about 15 cc. of benzene and the whole brought to boiling on the steam bath. After rotating the flask to mix the aqueous residue and benzene, the supernatant benzene is carefully decanted into a beaker of 100 cc. capacity. This process of extraction is repeated four times. The benzene is now evaporated, first on the electric hot plate nearly to dryness, then completed on the steam bath and, finally, the last traces of benzene are removed by placing in the vacuum desiccator for about 15 minutes. The removal of the last traces of benzene is an unnecessary refinement if the neutralization method only is to be used for the final determination of fatty acids. The residue from the benzene extraction is now heated moderately hot on the steam bath and about 15 cc. of redistilled petroleum ether added and by means of a stirring rod it and the residue are thoroughly mixed. The petroleum ether is then decanted into a 125 cc. flask. This process of extraction is repeated six times. The petroleum ether is then evaporated on the steam bath. For the neutralization method the residue need not be entirely free from petroleum ether; however, not more than a drop or two of liquid is permissible. At this stage the residue is dissolved by the addition of exactly 10 cc. of redistilled alcohol and titration carried out as will be described later. On the other hand, if the fatty acids are to be oxidized, the last traces of petroleum ether are removed by placing the flask in the vacuum desiccator for about fifteen minutes. To the residue are now added about 15 cc. of redistilled alcohol and 0.2 cc. of saturated NaOH solution and saponification again produced as described before. The alcohol is evaporated and the residue completely dried by placing the flask in the vacuum desiccator for a few hours. To the dried residue are now added 15 cc. of cold chloroform and the whole allowed to stand 15 minutes. The chloroform is poured through a small filter paper in order to catch any of the residue mechanically held by it. This process of extraction is repeated three times. The filter paper and the flask are now dried by placing in the vacuum desiccator until the chloroform has evaporated, a comparatively few minutes. The residue in the flask is dissolved by adding to it three portions of 5 cc. each of hot redistilled alcohol, which are poured through the same filter paper used in making the chloroform extract. The alcohol is now evaporated, the residue completely dried in the vacuum desiccator, acidified with about 1.5 cc. of acid solution and extracted with petroleum ether, as described before. The petroleum ether extract is decanted or filtered into a 250 cc. Pyrex glass-stoppered flask, the ether evaporated on the steam bath and the last traces removed by placing in the vacuum desiccator for about 30 minutes. The oxidations of the fatty acids is now carried out exactly as described by Bloor[17].

The titration is carried out as follows: Ten cc. of the approximately N/10 normal acid and alcoholic NaOH stock solutions are each pipetted into 100 cc. volumetric flasks. The acid is diluted to the mark with H_2O and the NaOH with redistilled alcohol. The normality of the acid is known and that of the alcoholic alkali is now determined by titration. The alkaline solution is run into the acid solution, using 0.1 cc. of 0.8 per cent. alphanaphtholphthalein as the indicator. This procedure gives an approximately N/100 alcoholic solution of NaOH of known normality. To the alcoholic solution of the fatty acids described above is added 0.1 cc. of the 0.8

per cent. alphanaphtholphthalein indicator and the acidity titrated with the N/100 alcoholic NaOH solution. The amount of NaOH solution used in this titration minus that necessary to neutralize 10 cc. of the redistilled alcohol used as the fatty acid solvent allows the milligrams of fatty acids present to be calculated. In order to neutralize one milligram of pure oleic acid 0.354 cc. of N/100 NaOH is necessary.

Discussion

The development of the methods for estimation of fatty acids outlined above permitted the study of the quantitative accuracy of certain of the procedures involved in them. One of these was the investigation of the effect of repeated saponifications on the titration values obtained. It was found that the first petroleum ether extract of the benzene residue, which represented one saponification, gave the same titration value as the petroleum ether extract prepared for the oxidation method, which represented a second saponification and extraction. It was found also, that incomplete drying of the saponified alcohol-ether extract of whole bile before extracting the fatty acids with benzene did not affect the final titration value. These findings allowed the elimination of two rather time-consuming procedures when the neutralization method was to be employed. Obviously, such elimination makes the neutralization method more simple and easier than the oxidation method.

The question as to whether the alcohol-ether mixture extracted all the organic fatty compounds, except soaps, was studied. For this purpose 10 cc. portions of bile were extracted as described in the above methods. The precipitate was collected quantitatively on a filter paper and washed repeatedly with alcohol-ether mixture. The precipitate was then thoroughly extracted with ethyl ether and the extract analysed for its lipid content. The ethyl ether extracted any fatty bodies, excluding soaps, remaining in the precipitate after the alcohol-ether washing. The amounts of fatty acids thus extracted and the amounts derived from the lipids extracted from the original specimens of bile by the alcohol-ether mixture are outlined in the foregoing table.

TABLE I

Efficiency of the Alcohol-Ether Extraction of Bile Lipids as Shown by Comparison of the Weights of Fatty Acids, Expressed as Oleic Acid, With those in the Ethereal Washing of the Precipitate

Specimen	Source of bile	Mgm. of fatty acids per cc. bile	
		Ethereal extraction	Alcohol-ether extraction
1	fistula	0.03	1.97
2	fistula	0.13	7.10
3	fistula	0.00	1.59
4	fistula	0.00	0.97
5	fistula	0.00	0.89
6	fistula	0.02	0.86
7	gall bladder	0.02	11.15
8	gall bladder	0.05	18.00

The table shows the alcohol-ether method of extraction to be from 98.2 to 100 per cent. efficient, as judged from the amounts of fatty acids found in the ethereal residue.

The amounts of soaps present in the precipitates after washing with ether, as described above (see Table I), were investigated. For this purpose the precipitates were extracted with hot alcohol, saponified with alcoholic sodium hydrate and dried. The resulting residues were analysed for their fatty acid contents by the procedures described in this communication. By these procedures the fatty acid content of the soaps of one precipitate was 0.09 mgm. per cc. of bile and of the others from 0.01 to 0.05 mgm. per cc. In view of these findings it was considered essential to ascertain by experimentation whether the alcohol-ether used in extracting bile dissolved any of the soaps originally present in bile. This was ascertained by two procedures. One of these was the demonstration that the alcohol-ether mixture did not dissolve pure sodium oleate. The second method consisted in carrying out, with one exception, the entire procedure for determining fatty acids of the bile as described. The one exception noted was the failure to acidify the saponified biliary extract before extracting with benzene. Under these conditions no titratable or oxidizable substances were extracted by benzene. These findings show that soaps originally present in bile were not soluble in the alcohol-ether mixture used in its extraction.

Another control of the method consisted in examining the petroleum ether extract as prepared for the oxidation method for possible nitrogen contamination. This was done because Kumagawa and Suto[13] were unable to completely free from nitrogen their petroleum ether extracts of fatty acids, obtained after saponification of animal tissues. For this purpose amounts of petroleum ether extracts representing 8 cc. of human fistula bile were evaporated to dryness. The resulting residue was digested, using the micro-Kjeldahl method of Folin and Wu[18], plus the addition of 30 per cent. hydrogen peroxide solution to assist in the oxidation. By this means it was found that the bile extracts contained no demonstrable nitrogen.

Investigation of the comparative results obtained by the two methods described was made. For this purpose eight different specimens of human fistula bile and one of bile from the human gall bladder and the bile from the gall bladders of two dogs were used. The results obtained are tabulated as follows:

TABLE II

COMPARATIVE WEIGHTS OF FATTY ACIDS, EXPRESSED AS OLEIC ACID, OBTAINED FROM THE LIPIDS OF BILE BY THE NEUTRALIZATION AND OXIDATION METHODS

Specimen	Source of bile	Mgm. fatty acids per cc. of bile		Per cent. variation from Neutralization method
		Neutralization method	Oxidation method	
A	Fistula	2.32	2.14	7.8
B	"	7.10	7.49	—0.6
C	"	1.99	1.85	7.0
D	"	2.18	1.98	9.2
E	"	1.15	1.17	—1.7
F	"	4.46	4.49	—0.7
G	"	3.31	3.42	2.7
H	"	3.40	3.64	—7.0
I	Gall bladder	2.65	2.84	7.2
J	(Dog) gall bladder	12.92	11.43	11.5
K	" " "	35.5	36.0	1.4

Study of the table shows that the two methods gave results showing differences of 0.6 per cent. to 11.5 per cent., neither method giving results persistently above or below the other. The variations found may be readily explained as due to the presence of fatty acids other than oleic acid in the extracts of bile examined. It will be recalled that in both methods the weights of fatty acids are expressed in terms of oleic acid. For this reason the results obtained by the two methods can be considerably varied by mixtures of fatty acids of sufficiently different molecular weights. Obviously, the only strictly rigorous procedure would be to express all analytical data in terms of neutral equivalents and of oxygen equivalents, without making the assumption that the fatty acids of the bile consist entirely of oleic acid.

The procedures proposed were further controlled by investigating the recoverability of added fat to bile. For this purpose known amounts of olive oil were added to bile, the fatty acid content of which had been previously determined, and the total fatty acids then quantitated by the procedures described. The results obtained in 7 different specimens are outlined in the table which follows:

TABLE III

THE WEIGHTS OF FATTY ACIDS, EXPRESSED AS OLEIC ACID, RECOVERED FROM THE SAME SPECIMEN OF BILE BEFORE AND AFTER THE ADDITION OF OLIVE OIL

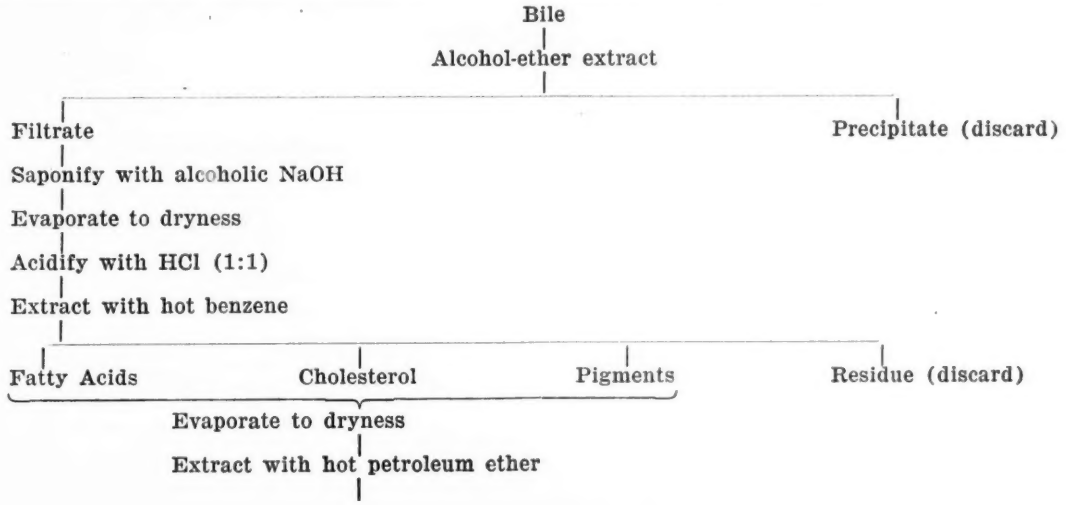
Specimen	Mgm. of fatty acids per cc. of bile					
	Before addition of olive oil		After addition of olive oil		Amount theoretically present	
	Neutralization method	Oxidation method	Neutralization method	Oxidation method	Neutralization method	Oxidation method
A	1.97	2.25	4.46	4.49	4.47	4.75
B	0.97	0.74	3.68	3.67	3.47	3.24
C	1.15	1.17	1.58	1.52	1.65	1.67
D	0.81	0.88	3.40	3.64	3.31	3.38
E	0.88	0.97	3.31	3.42	3.38	3.47
F	0.86	1.23	3.39	3.67	3.36	3.73
G	11.15		12.62		12.35	

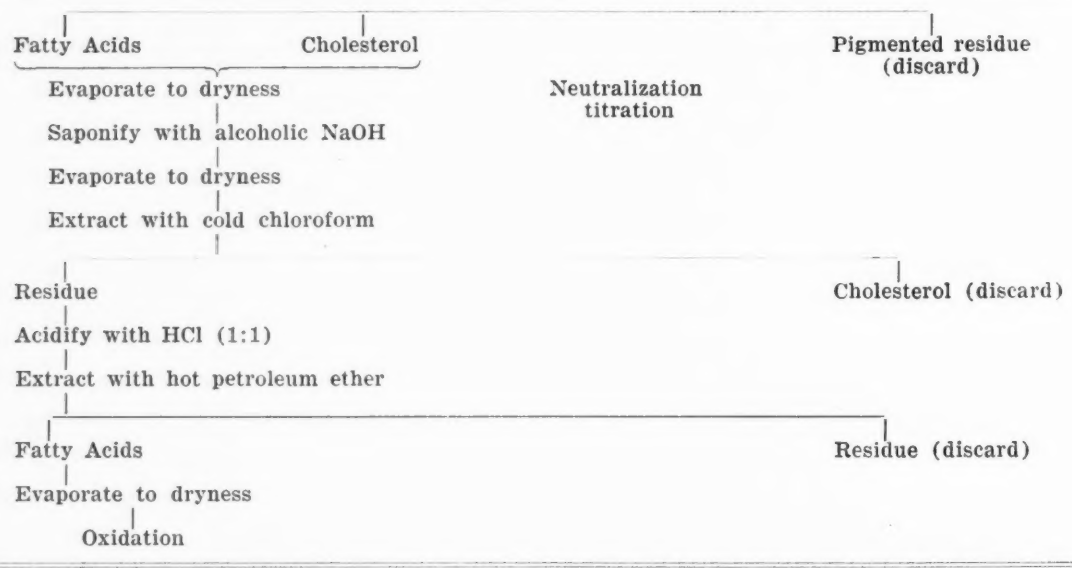
The results recorded in the above table demonstrate that fats added to bile can be quantitatively recovered by the procedures described.

SUMMARY

Procedures have been devised for isolating the fatty acids of bile in an apparently pure state and for their quantitation. The experimental studies necessary to establish the reliability of these procedures have been made. Two methods have been described for estimating the relative weights of the fatty acids: one is a neutralization method and the other the application of an oxidation method devised by Bloor. Which method is preferable will depend largely on the type of work to be accomplished. The neutralization method has the advantage of being more simple technically than the oxidation method. The two methods are apparently of approximately equal accuracy.

The following schema summarizes the procedures involved in the two methods:





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COCCUS INFECTIONS IN AND AROUND THE KIDNEY*

BY J. DELLINGER BARNEY, M.D.†

INFECTIONS of the kidney by pyogenic cocci are comparatively infrequent, as compared with those produced by the colon bacillus or the tubercle bacillus. Yet, owing to the rather obscure and varied objective and subjective symptomatology they are often overlooked or diagnosed as some other condition. I believe that mild forms of coccal infection of the kidney are much more common than is supposed to be the case.

Without going back in our records many years, I have been able to collect 60 recognized cases of this type of infection, together with 61 cases of perinephritic abscess, a lesion which I believe to be closely allied to, if indeed not identical with the kidney infection now under consideration. While numerous writers have reported a few or single cases of acute hematogenous infection, one is able only with difficulty to get a composite picture of the disease.

The male is far more often attacked than the female, as shown by the fact that there were 84 men and 37 women. While the young adult of 31 is most often attacked, one may encounter patients of 71 years of age on the one hand and

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only 4 years on the other. In fact 16 of these cases had not yet reached the age of puberty.

In 70 cases the right kidney was involved; in 41 the left side. In 10 patients, however, the process was either bilateral at the time when they were first seen or soon became so. Perinephritic abscess is on the other hand practically never bilateral.

While one usually thinks of this type of infection as of sudden, sharp onset, a clean-cut course and brief duration, the reverse is often true. The duration of symptoms in these cases varied from 36 hours to 6 months. In the cases with a duration of several days or weeks, and these formed the majority, the onset of pain was gradual in many. It was intermittent in most, constant in but a few. At the time of examination, or while under observation, pain alone might be present; in others tenderness alone was found. Both these symptoms were said to be absent, however, in 16 cases, the diagnosis being made only at autopsy or by the character of the urine from the separate kidneys combined with a careful scrutiny of other features such as temperature, white count and the presence of other septic foci.

The presence of possible foci infection while very evident in some, was either a matter only of inference or was not demonstrable in most. Furuncles or carbuncles existing either at the time of the kidney lesion or shortly before were noted in 13 cases. In order to see the picture from another angle I have looked up the records of over 200 cases of carbuncle and have found evidence of contemporaneous kidney complications in not a single instance. I infer from this that this form of sepsis does not often give rise to renal lesions until later. Septic fingers or hands preceded the kidney complication 4 times, otitis media twice, mastoiditis once.

Although it is generally recognized that focal infections are at the bottom of most urinary infections and while such foci are often found in teeth, tonsils, sinuses, ears, respiratory and gastrointestinal tracts, there are on the other hand, many renal infections in which no septic focus outside the urinary tract can be demonstrated. It is, therefore, of doubtful wisdom to remove teeth, and tonsils or to do radical operations on sinuses unless one can quite definitely prove that such are the cause of the renal infection. As Young says, "hundreds of such operations have been performed without facilitating the cure of the urinary infection . . . ". Personally, I believe that infected teeth are responsible for many of the coccal infections both of the kidney and of the perinephritic fat and that every possible means should be taken to eliminate the teeth as a factor. It not infrequently happens that a roentgenogram of a tooth will be negative whereas there is a pus pocket at its root. This discrepancy may be explained by the fact that the film was not taken in such a position as to show the absorption of the alveolar process or the infection was of too short duration to produce a change in the bone.

Among 22 cases which I gathered from the autopsy records there had been a recent prostatectomy in 5 and cancer of the bladder was found in 2. Glycosuria was found 4 times in the series of 121 cases.

Absence of urinary symptoms was noted in 53 cases and the urine was persistently negative in 35, these features being consistent with the usual location of the lesions in the cortical substance of the kidney at some distance from the pelvis and calices. In 19 cases, however, there was more or less marked frequency of urination; in 6, gross hematuria had been noted by the patient on one or more occasions. Examination of the urinary sediment showed a few to many leucocytes in 42 instances, these being combined with a few blood cells in 29 others, while in 7 blood alone was found. Unfortunately, the records are hazy as to the results of an examination of the stained smear of the urine sediment. Cocci were, however, found in many either from the bladder or kidney urines and these findings were made by culture in others. In the light of recent knowledge we now know that the culture tube is sometimes a most unreliable and misleading means of arriving at accurate conclusions, owing to the frequent presence in the urine of the colon bacillus. The complete, or comparatively complete absence of pathological elements in the urine of these cases, is in striking contrast to those produced primarily by B. Coli where pus and organisms are in abundance.

The severity of the infection was shown in most by the presence of a swinging septic temperature, rising from 101 to 104 and sometimes to 105 degrees; in a few the highest temperature was 100 degrees.

One or more chills are recorded in many of the histories. The white count also showed wide variations, being 6200 in one case and 10000 to 15000 in others, but in most running up to 20000 or 30000 with a maximum of 48000.

While the colon bacillus may, with proper technic, be demonstrated in the blood stream in a large percentage of cases, in acute coccal infections the organisms are far more elusive. With improvements in technic it is now possible to demonstrate cocci in the blood stream with much greater certainty than in the past. There seems to be no doubt, however, that cocci are far less numerous than B. Coli.

The numerous careful studies, both experimental and clinical, especially those of recent years, of the question of kidney infection has cleared up many doubtful points. I believe that the blood stream is by far the most frequent, if indeed it is not the only route by which cocci can reach the kidney.

In the cases under consideration, however, either with no demonstrable focus or with one remote from the kidney the blood stream is the

only path which the infecting organism could reasonably have pursued. Enough has already been done by Rosenow, Bumpus, Meisser (*J. A. M. A.*, LXXVIII: 1922, *Arch. Int. Med.*, XXVII: 1921, *J. A. M. A.*, LXXVII: 1921, *J. Urol.* VI: 4, 1921), and others, to show not only that the lesions which one sees in the clinic can be reproduced experimentally, but also it has apparently been proved that certain organisms have a selective affinity for the kidney. The investigations of these men have opened our eyes to several important facts, namely, that cocci and bacilli may and often do exist together in the same kidney, that the presence of the two organisms can be identified with accuracy by the microscope rather than by the culture tube and that otherwise quiescent foci in the teeth or sinuses of the skull are perhaps the most important sources of these infections.

After reading the splendid work of many writers on the subject of coccal infections of the kidney and of its surrounding fat capsule one feels that there is little to add to the description of the pathological conditions found at operation or autopsy. The lesson to be learned from this work is that various organisms such as streptococci, staphylococci and bacilli, in one or the other combination, may be found in the same kidney, a phenomenon which may account for the otherwise obscure symptoms and perplexing operative findings.

While most descriptions of the acute hematogenous kidney give the impression that the organ is generally large and easily palpable this was the case in only 39 of this series, whereas in 33 instances it was definitely stated that palpation showed no evidence of the kidney or of a mass in its vicinity. I have, in fact, operated upon two or three such cases, each the seat of one or more cortical abscesses wherein the size of the kidney was not in the least abnormal. While it is true that the type of kidney now being discussed may be markedly enlarged, I wish to bring out the point that increase in size is not a constant feature and that an organ of normal size may be the seat of several abscesses. In fact all the perirenal tissues may exude serum and even pus while the kidney itself may appear essentially normal. Decapsulation will, however, generally show a much thickened capsule which, when removed, will often reveal the surface of the kidney completely studded with miliary abscesses.

Another feature of interest was the fact that in the 22 cases found at autopsy there was no clinical evidence whatever, that the kidneys were the seat of infection. It is true that these cases died of a general septicemia, proved in most to be due to the staphylococcus or streptococcus, but it is striking that in not a single instance was there pain or tenderness in the kidney region or a demonstrable increase in the size of the organ. Yet the pathologist described single or multiple abscesses in both kidneys with extensive infection in every instance. In view of these findings it is worth while noting that the urine before death had been entirely negative in 6 cases.

The fact that these kidneys may be symptomless in the presence of severe infection or that they may mask their presence by the production of unusual symptoms may account for the fact that the appendix was held guilty and was removed in 4 instances, and that in several other cases other intra-abdominal lesions were diagnosed before the true nature of the case was discovered.

I wish to emphasize that sometimes there is extreme difficulty in making a differential diagnosis of perinephritic abscess, cortical abscess of the kidney, and abscess of a high retrocecal appendix. In many instances signs and symptoms are almost identical in the two conditions. More than once I have seen such cases most carefully studied and passed upon by surgeons and urologists only to find at operation that the diagnosis was wrong. In the case of left-sided symptoms one must not overlook the possibility of an abscess of the spleen. Only recently I had on my service at the Massachusetts General Hospital a male patient who had been most carefully studied by internists and surgeons. The patient ran a persistently septic temperature with a moderate degree of leucocytosis. His complaint was pain and tenderness in the left loin, mostly however, anteriorly just below the costal margin. Here a mass could be felt. Urological examinations were negative except for a low left kidney evidently due to pressure by a mass above it. The diagnosis of the majority of those who had studied the case was perinephritic abscess and as such I was about to operate upon him. Just at the last moment, however, being still unconvinced I asked one or two other surgeons to see the case and their diagnosis was abscess either of spleen or liver. Operation disclosed an enormous abscess of the spleen.

Thirty-eight of these cases were treated expectantly, these including the 22 who died without evidence of a kidney infection, the diagnosis of acute hematogenous infection in the others being possibly incorrect in some, but being based upon the clinical picture which has been described. Many of these patients were extremely ill and the surgeon is to be congratulated upon the skill with which he observed them. Having had several cases of this sort in private practice where there was no reasonable doubt of the diagnosis and where very sick patients recovered without operation, we wish to discuss the question of treatment at greater length. We agree with Cabot (*J. Iowa State M. Soc.*, XI:1, 1921) that "it is difficult to determine when a kidney should be removed and when it should be allowed to remain". If a temperature of 104°, repeated chills, leucocytosis of

28000, marked tenderness, pain, spasm and apparent enlargement of the kidney, these symptoms continuing for several days, are not indications for operative interference, we do not know what more are necessary. Yet, to be specific, such a case, a robust man of 35, was under my care this winter, tried my judgment sorely, but gradually quieted down to a condition of normalcy in every respect. He is now perfectly well, and has had the infected tooth which caused the kidney lesion successfully treated. We feel certain, but our belief can never be proved, that operation would have been unwise. Other similar cases, ending as happily, have also been seen.

As already stated I have included 61 cases of perinephritic abscess in this series in the belief that this lesion is closely related to, if not identical with the kidney lesions already discussed. In his discussion of perinephritic abscess some years ago, Richardson (*Surg. Gyn. & Obst.*, July, 1915) mentions 2 cases which he thought suggested "that perirenal suppuration may have been headed off by early operation" (of a cortical abscess). One case, operated upon on the fourth day, showed abscess in the lower pole, about to extend into the perirenal fat. Another case, operated upon on the fifteenth day showed a solitary abscess under the fibrous capsule. Both were due to a staphylococcus. These 2 cases are practically identical with several of those in this series in which either a nephrectomy was done at once, or an abscess was drained. Furthermore, among the perinephritic abscesses there were two cases in which the kidney was exposed, cortical abscesses found and the organ removed. My belief is that cortical abscesses may sometimes be small, few and comparatively inconsequential. These may give rise to symptoms which are mild but identical with those of the more severe types of infection. They may be diagnosed correctly or incorrectly, they may be operated on for other conditions, especially appendicitis, or if they escape this intervention, they may and often will go on to spontaneous recovery. In other instances, such abscesses may rupture into the perirenal fat, producing an infection which may progress either to operation or to spontaneous relief. During this process, dense adhesions form about the kidney, so that the organ is not seen or disturbed during operation, in the majority of instances. Other cases progress more rapidly, the abscesses enlarge, coalesce, burrow more deeply into the kidney and gradually effect its more or less complete destruction. In the latter event, nephrectomy is indicated. Between the two extremes there are several varieties, each offering its special features and calling for our best judgment and skill.

My study of this series of cases and my experience with many others seen in private practice has convinced me that no type of case calls for more painstaking study, calmer judgment or more self-restraint. As in many other conditions the easiest and apparently the obvious thing to do is to operate at once. One is influenced in this direction by having on his hands a septic patient, often desperately ill, with a painful, tender kidney, a high septic temperature and a marked leucocytosis. While Brewer of New York, who first called adequate attention to this type of kidney infection, advocated early operation and while his teaching was followed for a long time it is now felt by those in a position to judge that watchful but skillful waiting is justified. Furthermore, while nephrectomy was generally the operation most commonly performed, it is now a comparatively unusual method of handling the situation. In the series under consideration nephrectomy was done in only 10 and in my own practice I have removed the kidney but two or three times. If and when operation seems to be indicated it will be found that decapsulation alone will generally suffice. The perirenal fat will be found to be markedly edematous, sometimes even free pus is found in the approach to the kidney. The kidney may be but little larger than normal but its tense and much thickened capsule is a striking feature. On dividing this the entire surface of the kidney may be found to be studded with miliary abscesses. While it would be futile to drain all of these, those of any considerable size should be incised and drained. Sometimes indeed only one, two or three discrete abscesses are found. If conservative measures such as these prove to be insufficient as shown by a persistence of symptoms then the surgeon is justified in removing the kidney at a second operation. The fact is, however, that the more conservative operation almost always brings relief. While it is true that the description by the pathologist and the surgeon of the ten kidneys which were removed in this series was that of a badly infected organ, some of them at least might well have subsided in the course of time under expectant treatment. The presence of dense and localized adhesions and dimpled fibrous areas in the renal cortex often met with in the course of operations upon the kidney for other conditions, tells the tale of ancient abscesses which have been taken care of by rupture into the perirenal tissues, resolution, and a deposit of scar tissue. In view of the fact that some of the abscesses may escape detection during the exploration and decapsulation of a kidney and that these may progress to the point where nephrectomy under disadvantageous conditions is necessary it appears to us best to adopt the policy of waiting until the need for operation is a matter of no doubt.

A final reason for postponing operation, especially nephrectomy, until it seems to be an inescapable measure is that in about 12% the infection becomes bilateral. Under these circum-

stances it is well to feel that the kidney first involved is still present, even though somewhat damaged.

In closing I wish to say a few words about the management of the focus from which the kidney infection took origin. It is often obvious either in the history or examination and is often already healed. On the other hand careful search may fail to show anything definite. Where the focus is still active it had better be handled like the kidney only by expectant treatment, for it should be borne in mind that a further liberation of organisms into the circulation may be produced by attempts at radical cure. In the case of a septic lesion which is adequately drained, attempts at still better drainage are unwise, lest in so doing new paths of infection be opened. In the event of an alveolar abscess being responsible for the infection we are strongly opposed to this being interfered with until the kidney infection has been concluded either by operation or by natural processes and also until the patient's condition is greatly improved. In saying this we have in mind the researches of Bumpus (loc. cit.) and others which show that the extraction of infected teeth may and often does give rise to severe exacerbation of an existing kidney infection. While it may be argued that the patient is constantly in danger of lighting up his infection by leaving his tooth *in situ* we have, in such circumstances, more faith in the *laissez faire* policy than in radical measures.

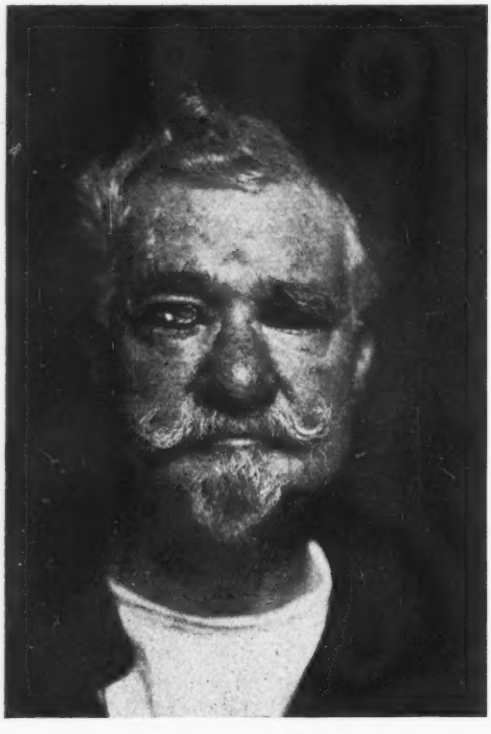
In closing I wish to emphasize once again that there is no question that many of the cases which appear at first to warrant operation will recover under expectant care if carefully and frequently observed. It is far easier to operate than to play a conservative part, but I believe that quite as much credit is due to the display of skill and judgment in the latter course as in the former.

EPITHELIOMA OF THE EYELID

Case Report

BY J. J. CORBETT, M.D.*

THERE is nothing very unusual about epithelioma of the eyelid; in fact such a condition can hardly be called uncommon. Furthermore there seems to be no difficulty in the diagnosis of this condition, but there does seem to be a considerable difference of opinion as to the method of treatment. The case about to be described gives ample evidence of this fact.



The patient, 63 years old, noticed this growth on his right upper lid early in the year of 1925. He was advised to consult an oculist in one of the eye clinics in Boston. He went to the Eye Clinic of the Boston City Hospital in 1927 but not being able to find the man he sought returned home. On the advice of a friend he presented himself at another clinic. The patient listened to the discussion of his condition at this second clinic and was able to get some idea as to the nature of his trouble. Judging from what the patient said, it might be concluded that there was no question as to diagnosis at this clinic but the man in charge decided he should be sent to another eye clinic as the condition was one which involved an appendage of the eye. This advice he followed.

Some few days later he presented himself at the second Eye Clinic and, as a group of students was present getting instructions, he had an opportunity to hear further discussion of his case. The result of all this discussion was the suggestion that the growth be "snipped" off, and the patient was advised to enter the hospital for that purpose. He told the surgeon in charge that he preferred to go home and would return the next day for admission. This he did not do.

On February 25, 1927, he returned to the eye out-patient department of the Boston City Hospital and was seen by the surgeon on duty. The surgeon listened to the patient's story and, impressed with the advice which the patient had received, decided to remove the growth surgically. The patient was admitted to the hospital and on March 11, 1927, the tumor was removed. He returned to the out-patient department for observation on April 4, 1927. According to the record, the wound looked clean; there was no disfigurement as a result of the operation. Furthermore, according to the patient himself, he was very much pleased with the result.

He reappeared at the eye out-patient department of the Boston City Hospital on June 29, 1927, and showed a return of the growth which measured 20 x

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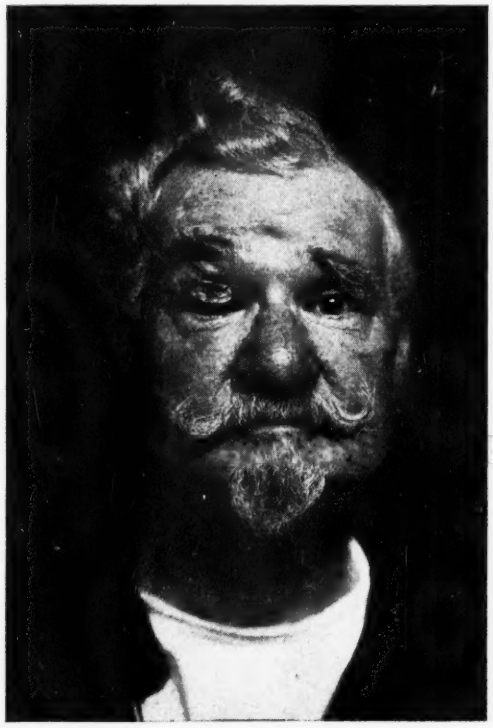
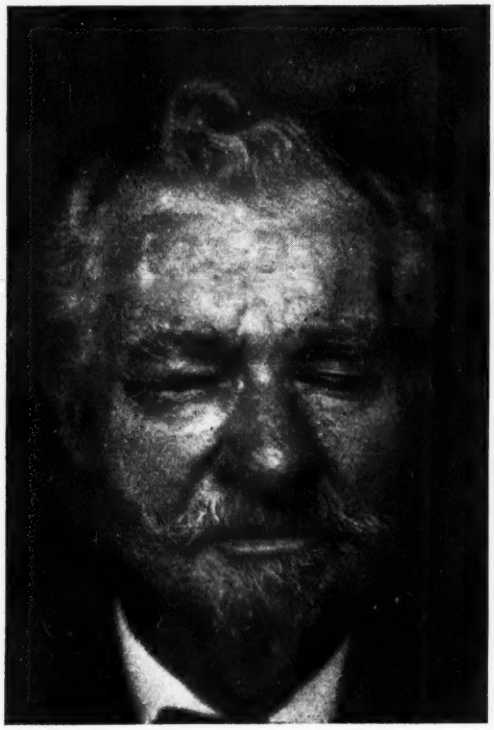
30 mm. There was some discussion as to the method of procedure and it was finally decided to treat the condition with radium.

Before outlining the method of treatment it





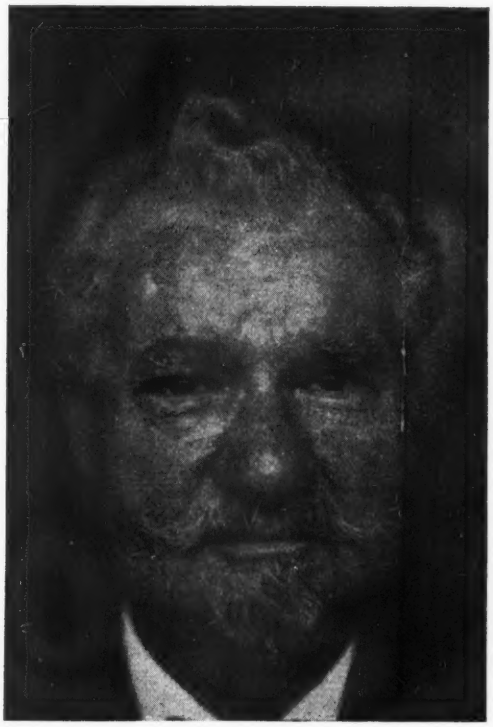
will not be amiss to consider the various methods of treatment of this condition and give the reasons why or why not such technic should be followed.

First: *Surgical Removal of the Growth.*

In this case it would mean the complete amputation of the eyelid. This would necessarily have to be followed by a plastic operation for the restoration of this structure. It would be possible for a good plastic surgeon to replace it but to restore the function of the lid would be a much more difficult piece of work and its success would be very doubtful.

Second: *Electro-Coagulation of the Growth.*

This might be attempted but there would possibly be some sacrifice of the healthy tissue of the lid. Furthermore there are some surgeons who are doing considerable work with the radio-knife who would be inclined to amputate the



lid in order that they might feel sure that there would be no recurrence of the growth. If this treatment were followed, here again it would be necessary to resort to plastic surgery and there would be the same doubt as to the successful restoration of function.

If, however, the patient had been seen before operation and the well-defined circumscribed growth of the upper lid presented (as we have been led to believe by the description) the writer would have desiccated the growth. This type of tumor can be thoroughly dried with the Oudin current, lifted off with a curette and the base seared with the same current. Results with this method of treatment are very satisfactory and permanent. The scar is soft and pliable and not conspicuous.

Third: *Radium.*

In the use of Radium it is very evident that much good can be realized in this type of case.

The important question would be as to the adequacy of the treatment without impairment of vision. There is one thing sure; whatever the results of radium in the treatment of a condition such as this, it would not preclude the use of either of the other two methods in the event of failure. For this reason radium was considered the method of choice by the writer.

On June 29, 1927, fifty mgm. of radium in four needles were placed over a window on a piece of sheet lead, one mm. thick. The window in the sheet lead was cut to the size of the growth. Another piece of sheet lead of the same thickness was covered with a rubber dam and placed under the upper lid of the cocainized eye. The radium was allowed to remain in place for two hours.

On July 11, 1927, the patient returned and the lesion appeared smaller. The dose of June 29 was repeated.

July 20, 1927, the patient showed a marked improvement. The same amount of radium was applied in the same manner over the growth and was allowed to remain for one hour. The eye was protected as in the first application.

August 10, 1927, when the patient returned there was left only a small area on the nasal side which measured 2 x 5 mm. This area was exposed to twenty-five mgm. of radium for two hours. The change in arrangement of the dose was due to the size of the lesion.

On August 24, 1927, the patient showed only one small spot about the size of the head of a pin. Fifty mgm. of radium was applied for one hour. This ended the treatment.

The four photographs showing the eye opened and closed give a very good idea of the appearance of the growth before and after treatment.

The patient has no scar, there is no loss of function in the eyelid and for the interest of the Ophthalmologist it should be stated that the vision of the right eye on September 27, 1930 (over three years after treatment) was 20/20 normal with a correcting lens.

Observations in this case would indicate that surgical removal of epithelioma of the eyelid cannot be relied upon as a thorough and final method of treatment which will prevent recurrence;

that radium succeeds where surgery fails in treating epithelioma of the eyelid and for that reason should be used before instead of after operation;

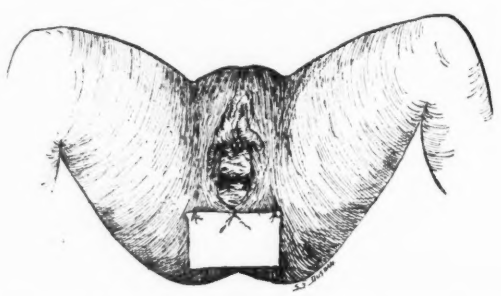
that radium can be used in treating epithelioma of the eyelid without any impairment of vision.

ON THE DRAPING OF PATIENTS FOR VAGINAL OPERATIONS*

BY CARL BEARSE, M.D.†

THE method of covering the anus with rubber tissue as demonstrated by Belt‡ appeared so attractive that its use has been adopted for vaginal operations. It has proved to be so satisfactory and so much better than the use of towels, sheets, and gauze pads, which sag during the course of an operation, that its more general use is advocated.

A piece of rubber tissue, about four inches square, is attached by three or four Michel clips to the skin immediately above the anus, as shown in the accompanying illustration. This covers the anus completely and will not sag, even if the rubber tissue becomes wet.



This method of draping has been recommended for vaginal deliveries and here, also, has proved to be very effective.

*From the Surgical Service of the Beth Israel Hospital, Boston.

‡Shown in a motion picture on perineal prostatectomy by Dr. A. E. Belt.

†Bearse—Assistant Visiting Surgeon to Beth Israel Hospital. For record and address of author see "This Week's Issue", page 783.

AN AUSTRIAN CHILDREN'S BUREAU

The city of Graz has one of the best systems of public child-welfare work in Austria outside Vienna, according to a recent report from that country. Its municipal children's bureau (Judgendamt) with its 21 branches has charge of all phases of child-welfare work except education. This bureau conducts the municipal health centers and clinics for children and young persons, sanatoriums for tuberculous children, vacation homes for undernourished children and centers for expectant mothers. It dispenses relief to poor persons under 18, supervises delinquent children and probation work for the juvenile court, has guardianship of children born out of wedlock, and obtains legal aid for mothers of such children. Similar bureaus have been established in other Austrian cities. —*U. S. Children's Bureau, Washington, D. C.*

CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

TWO ATYPICAL CASES OF CHRONIC LUNG INFECTION

CASE 17151

MEDICAL DEPARTMENT

PRESENTATION OF CASE

DR. EDWARD G. THORP*: This is the case of a single unoccupied Irishwoman sixty-six years old who entered October 14 complaining of pain in the left chest of six months' duration.

Six years before entrance she had sudden hemoptysis of 250 cubic centimeters of blood with no antecedent symptoms. She was then well except for some weakness and malaise until six months later, when she had a severe chest cold. Her doctor outside told her she had some chest trouble, but did not say what it was. She kept on working in spite of her cold and great weakness. She had some cough and purulent sputum, an ounce or two a day. She became worse and her doctor sent her to the Essex Sanatorium, where she had been ever since. At the sanatorium she had 4 to 6 ounces of sputum a day. It was never foul and no tubercle bacilli were ever found. She had this for two and one-half years. For the past year she had had a sore throat which had been treated with oils and sprays without any real relief. For six months she had had dull pain under the left costal margin half an hour to three hours in duration, periodic in nature, worse on respiration. Two weeks before entrance there was a new sharp stabbing pain on the left chest in front, worse on deep breathing, relieved by strapping. Her weight at admission was 78 pounds. Her weight at death was 90 pounds.

Physical examination showed a small, pale, emaciated woman with flushed cheeks and shallow and rapid respirations. There was a small cystic mass below the angle of the right mandible. The tongue was beefy, excoriated, and atrophic along the margins. The right chest was hyperresonant, the excursion limited, the tactile fremitus increased. There were coarse crepitant râles throughout, and a bronchial whisper. The left chest was hyperresonant, with crepitant râles some of which were thought to be transmitted from the right. The blood pressure was 105/55. The leukocyte count was 16,750, the red count 4,000,000, the hemoglobin 60 per cent. The sputum was negative for tubercle bacilli and spirochetes on two occasions.

X-ray showed bronchiectasis plus a probable tuberculous lesion. Five days later a portable film showed consolidation also on the left.

The temperature was swinging, from 94° to 102°, for three days. Then it stayed for two days at 102°. On the last two days it dropped to 101°. The pulse was from 90 to 120; at the end it dropped again sharply. The respirations were 25 to over 50 at the end.

The changes in her chart were coincident with giving her codein. That stopped her cough and locked up the secretions. We wanted to take a chest film with the codein, then take another film after stopping codein and instituting postural drainage. By comparing the two a diagnosis should be reasonably arrived at. First she was given one-half grain of codein every half day, then a quarter grain. She did not cough at all and did not raise any sputum. The codein was omitted entirely when her respirations rose so rapidly. On October 21, a week after her entry, she suddenly became pulseless and died.

CLINICAL DISCUSSION

DR. FREDERICK T. LORD: Did we see this patient in the Thoracic Clinic?

DR. CHESTER M. JONES: I do not think you did. What we decided to do if we could was to get some more definite information about the extent of cavitation and then have you see her. When she came in she was obviously very sick. She was extremely emaciated and looked as if she had been septic for a long time. She was puffing and coughing a great deal. It seemed as if she had chronic bronchopulmonary suppuration. She was given more or less codein then. This diminished the cough. There were signs of cavity formation on x-ray examination. We thought she had pulmonary sepsis that was not draining at all. The temperature did go up and stay up after admission. It was very much like a lung abscess that was not draining. Her respirations were very interesting. They would go up to over 50 after the administration of codein. She did not cough at all.

DR. LORD: Regarding the demonstration of lung abscess by x-ray, it is not yet generally appreciated that cavities with fluid level cannot be demonstrated when the x-ray is taken with the patient lying on the back or abdomen. If possible the x-ray should be taken with the patient standing or sitting and the film on the back or front of the chest. Lateral x-rays with the patient similarly placed are also helpful. If the patient is too ill to sit up, an anteroposterior exposure may be made with the subject lying on one or the other side. At times when such means fail to show a fluid level, comparison of films taken with the cavity full and empty will satisfactorily demonstrate the presence of abscess. There is a small and important group of cases

*Senior interne on the East Medical service.

in which repeated trials by x-ray show only a circumscribed area of even increased density without fluid level, and yet operation discloses cavity formation. Though the demonstration of fluid level is highly desirable before operation is undertaken, exploratory operation is justified in selected cases with circumscribed areas of even increase of density.

DR. ARLIE V. BOCK: Why is the diaphragm so high on the right in this case, and why has it that notch? In this type of case you would expect to see both diaphragms low, would you not?

DR. GEORGE W. HOLMES: I should say they were low. This film was taken of the front of the chest at full inspiration. The second one might have been taken supine and might be in the respiratory phase of expiration. I should expect that there would be very little excursion. This difference in appearance may be due to the fact that the patient is lying down and that the focal spot of the tube was a little low with relation to the diaphragm. As for the notch, it is probably due to the way the diaphragm is attached. We occasionally see a notch like that. I think it is of no pathologic significance. It must not be mistaken for a complete collapse of the lower lobe. When we get complete collapse of the right lower lobe it looks very much like that.

DR. JONES: What do you think, Dr. Lord, about codein as a cause of pulmonary edema?

DR. LORD: I do not think that codein given in doses of half a grain could have very serious results.

X-RAY INTERPRETATIONS

October 16. The findings are consistent with tuberculosis and bronchiectasis. The pathology is much more extensive than usual. Bronchiectasis may involve more than the lower lobes. Tuberculosis appears to be chiefly in the right upper lobe. All of the changes in the chest might be due to bronchiectasis.

October 21. There is now probably additional consolidation in the left lung.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Chronic bronchopulmonary suppuration.

ANATOMIC DIAGNOSES

Chronic bronchitis and bronchiolitis.
Acute and chronic endometritis.
Atelectasis, slight.
Passive congestion of the liver.

PATHOLOGIC DISCUSSION

DR. TRACY B. MALLORY: I was inclined to suspect from the clinical history that a sudden rapid pneumonia had developed, and I was a little surprised at autopsy to find none at all. There was only an extremely marked bronchitis extending down into the terminal bronchioles with no alveolar involvement whatever. The whole bronchial tree showed a long-standing inflammation. Even down into the bronchioles the walls were thickened with lymphocytes and plasma cells, many of them with eosinophilic cytoplasm. Histologically the picture was somewhat suggestive of asthma, although clinically there were not the characteristic asthmatic attacks. We found no evidence of sepsis elsewhere in the body except in one spot, a most peculiar one. The body of the uterus was fairly well filled with purulent material. There was a very acute endometritis and chronic endometritis as well. I do not see how to connect that with the rest of the picture. The blood culture at autopsy was negative. The bronchioles showed the presence of organisms that looked like pneumococci, though they may possibly have been streptococci. Nothing that could fairly be described as a bronchiectatic cavity was found. The attempt to demonstrate cavities with codein was doomed to failure because there were not any to demonstrate.

It is a little difficult to see just why she died. I certainly do not feel satisfied.

DR. FULLER ALBRIGHT: Was she very cyanotic? Did she not simply die of suffocation?

DR. MALLORY: I should think she ought to have had more atelectasis in that case. There was very little.

DR. ALBRIGHT: What happens in death from drowning? Do you find atelectasis?

DR. MALLORY: No, not ordinarily. In fact, the alveoli are emphysematous there. Except for the larger bronchi one does not find any water. But drowning is such a sudden affair, a matter of three or four minutes, as compared with the days in which this patient was dying.

A PHYSICIAN: How was her right heart?

DR. MALLORY: It was not at all strikingly dilated.

DR. LORD: Interruption of the pulmonary circulation, as in the experiments of Lichtheim, delays the production of atelectasis. If the chest is opened with the pulmonary circulation intact, the lung collapses almost at once. If the pulmonary artery is ligated and the chest opened, the lung collapses much more slowly. It is possible in clinical cases that impairment of the circulation interferes with the development of atelectasis.

DR. MALLORY: I do not think we have any evidence that the circulation was essentially impaired. The right heart was not dilated. The liver was moderately congested, but not extremely so. We found none of the typical findings of death from acute right heart failure such as we get in emphysema for instance.

DR. HOLMES: Do you care to express any opinion from the autopsy as to what caused those shadows?

DR. MALLORY: I think that the degree of peri-

bronchial infiltration is sufficient to cast a shadow even if the lumina had not been filled with exudate.

DR. JONES: How much did the heart weigh?

DR. MALLORY: 240 grams,—quite small.

CASE 17152

MEDICAL DEPARTMENT

DR. HUGH F. FOLSOM*: This is a fifty-nine year old American housewife who entered complaining of cough and dyspnea and small amounts of sputum during the course of two years.

Her past history was negative except for "pleural pneumonia" five years ago.

She caught cold two years before entry and felt weak. She came to the Outpatient Department, where she was told that she had pneumonia and was advised to enter the hospital. She did not do so, but went home to bed for a week, then got up and went about her work until she was forced to go to bed for five weeks. Since that time she had had cough and sputum more or less every day, with great exacerbations every time she caught cold. She had gone downhill and had lost weight. Because her grandchild had either glandular or hilum tuberculosis, the patient's sputum was examined for tubercle bacilli a year before entry and was found negative.

At the entrance examination she was cyanotic and having a great deal of respiratory distress. Her breathing was of the asthmatic type. She was sitting up in bed wheezing, coughing frequently and raising purulent foul sputum. Physical examination was negative except for the lungs, which showed surprisingly little. There was normal resonance and fremitus. There were rather coarse râles throughout both bases, more on the left. We could not make out dullness anywhere.

Her urine was negative. Her red blood cell count was normal. She had a moderate leukocytosis during her stay, between 11,000 and 21,000. The smear showed 56 per cent lymphocytes. When checked it was found to be more or less the same. Repeated sputum examinations were made and were all negative for tubercle bacilli. There were various organisms, a good many polynuclears. Before she was discharged a guinea pig was inoculated with her fresh sputum. It died in two days. It showed no evidence of tuberculosis.

During her stay she continued to have a low grade fever and a rapid pulse. She was digitalized because of her age, but this had no effect. Adrenalin was tried with only temporary relief. Morphia gave considerable relief. Because the process seemed to be more on the left, postural drainage was tried, but did not have much effect. She raised between two and five ounces of purulent foul sputum daily. The foul odor decreased after gomenol was given. For a time she improved, but she soon grew worse again. Apparently she had a superimposed upper respiratory infection which had brought her into the hospital. She was finally discharged to the Baker Memorial at her family's request. At that time she was very ill, as seriously as when she came in. We thought the prognosis was very poor.

DR. ARLIE V. BOCK: Unfortunately I did not have an opportunity to see her after she was transferred to the Baker Memorial. There was nothing striking. She continued in about the same state and died without much change in her condition.

She struck me as having a very unusual type of bronchiectasis because of the persistence of her cough through the winter and summer and the widespread nature of the signs in the chest. As I remember it, there were râles in both the upper and lower lobes. She was quite cyanotic from the time she came into the hospital and remained so until death.

DR. CHESTER M. JONES: Isn't she clinically quite similar to Case 17151? How long did she live after she left the ward?

DR. BOCK: It was a matter of hours.

DR. TRACY B. MALLORY: I have an x-ray on Case 17151 for comparison. Perhaps Dr. Holmes will discuss both of them.

DR. GEORGE W. HOLMES: The picture that we have in these films of Case 17151 is not characteristic of any definite lesion. In a good many cases of bronchiectasis that is true. Unless we can see the dilated bronchi and get them full of secretion and then emptied, we cannot say whether bronchiectasis is present or not. Such an appearance as we see here is interpreted as diffuse fibrosis in the neighborhood of the bronchi. The appearance in Case 17152 is very similar. In this patient it is more extensive. At the apices there is a peculiar shadow in this case. I wonder if anything was found to account for it.

DR. FOLSOM: I think that was interpreted at that time as probably the shadow of the innominate.

DR. HOLMES: I should not think either one of these patients had tuberculosis. What else it might be I do not know.

DR. HUGO ROESLER: In another case of bronchiectasis I made a lipiodol injection of the bronchial tree. The picture showed dilatation of the smaller bronchi in the peripheral parts of the lungs and some round areas measuring up to three-quarters of a centimeter which represent apparent bronchiectasis. The technic of injecting lipiodol is not entirely satisfactory, as lipi-

*Interne in the Baker Memorial and recently senior interne on the West Medical service.

odol has a tendency to form drops and not to fill the bronchial tree completely.

DR. MALLORY: It is difficult to know how we could fill out all these bronchioles, because we have air and exudate to displace before a complete injection would be possible.

X-RAY INTERPRETATION

Such an appearance might be due to diffuse dilatation of the bronchi, including the finer bronchi and alveoli, with general peribronchial fibrosis.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Bronchiectasis (very atypical).

ANATOMIC DIAGNOSES

Acute and chronic bronchiolitis.
Pulmonary emphysema.

PATHOLOGIC DISCUSSION

DR. MALLORY: Both these cases presented a very similar process at autopsy. There was no dilatation of the large bronchi at all, such as we commonly see. Today's case showed an extremely marked pulmonary emphysema and very definite dilatation of the bronchioles. It involved the bronchioles of the upper as well as the lower lobes. The fully distended bronchioles beyond the periphery of the lung had a diameter of half a centimeter, I should say. There were no large sacs anywhere at all. The process was quite remarkable for its uniformity and diffuseness. The bronchioles were all filled with an acute exudate of polymorphonuclears. There was surprisingly little chronic infiltration, no lymphocytic infiltration and practically no fibrosis. It is quite surprising that so long-standing an infection did not lead to more extensive changes in the bronchioles. There was no extension whatever of the process into the alveoli. The sections show that quite well.

The other case, Case 17151, showed distinctly less dilatation of the bronchioles than this one. At the time of autopsy we found practically none at all. We have since gone back to examine the lungs and still find very little evidence of dilatation anywhere. In that case too there is a uniform process in all the lobes. In that case there is more lymphocytic infiltration and less of the acute exudate, and a little more fibrosis around the bronchioles. Again there is practically no evidence of extension of the process into the alveoli.

DR. FREDERICK T. LORD: Did either or both of these cases have a clinical aspect that might suggest asthma? Did they have wheezing?

DR. FOLSOM: Distinctly. That is why I tried adrenalin.

DR. LORD: There is a small group of cases with uncomplicated diffuse bronchiectasis due to bronchial asthma. Apparently the toxic injury arising in consequence of asthma may affect the bronchi and bronchioles alone. When, however, infection is the cause of bronchiectasis, involvement of the pulmonary tissue is ordinarily also to be expected. It is extraordinary in this case that the infection did not extend to the pulmonary tissue.

DR. MALLORY: I think all the other cases of bronchiectasis I have seen had quite extensive involvement which has usually been localized to one or two lobes, and there has always been a marked fibrous process throughout the lungs suggesting organized pneumonia. Neither of these two cases suggested it in the least. I cannot rule out a past asthma on anatomic grounds in these cases, but I can rule out the possibility that their death was caused by an asthmatic paroxysm.

DR. HOLMES: Some of the advanced asthmatics who have died of asthma showed x-rays very much like this.

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AVERTIN AND ITS USE IN TETANUS

TETANUS is usually considered a fatal disease when it reaches a stage where the nervous system is seriously involved by the toxin, and treatment with the specific antitoxin, at this time, has proved to be relatively inefficient. This is partly due to the fact that intravenous and intraspinal methods of administering the antitoxin are largely precluded on account of the hypersensitiveness of the patient; even the least touch often throws the patient into a violent spasm, sometimes so severe as to cause death. Recourse has usually been had, during the spasms, to drugs such as chloroform and it has been the drug of choice for many years. The results of treatment by this method, however, have been so disastrous that one looks forward with pleasurable anticipation to the advent of new preparations which may be used at a time when the disease is well established.

Of the newer anesthetics the most prominent are amytal and avertin. Amytal has been used in the treatment of tetanus, but not very successfully. Its dangers need not be considered here. Avertin, however, a drug synthesized as a chemical curiosity in 1922, has found a more definite place in the treatment of this disease. As a general surgical anesthetic, at least 250,000 cases have been published and reports of its use in tetanus are now appearing in medical literature. Recently, of eleven cases noted in Germany, seven recovered, and it would seem, although we are not yet in a position definitely to evaluate the worth of avertin in tetanus, that a valuable therapeutic aid has been given to us.

In view of the few reports in the American literature, attention is called to the following account from the Yale University School of Medicine by Huntington*. The patient, a boy of eleven, was seen in typical spasm. Avertin, 100 mg. per kilo, was administered by rectum, with immediate relaxation of the spasm. At the same time, antitoxin was given both intraspinally and intravenously. Avertin was continued at the rate of 80 mg. per kilo, twice a day, for 10 days, and then once a day for a few days longer. During its administration there was no depression of either the blood pressure or the rate of respiration. Huntington's patient made a normal convalescence and recovery was complete. The drug was not habit-forming. In addition to reporting the details of a single case, Huntington gives a good review of the literature on tetanus. He considers that avertin may prove an important addition to antitoxin as a means of treating this disease.

*Huntington, Robert W., Jr. *Yale Jour. Biol. & Med.* 3:207, 1931.

BIRTHDAY VOLUMES

THE presenting to a distinguished man of the medical profession of a birthday volume has become an institution in this country of considerable interest and importance. The volumes have varied greatly in their contents, but all serve to call attention to the work of an individual, at a period in his life when he may look back with pleasure on the younger men trained by him in the past. Two years ago, the pupils of Dr. Harvey Cushing presented him, on his sixtieth birthday, April 8, 1929, with a large volume of papers[1]. This volume contains articles by a large number of his former pupils, arranged in chronological order, and varying in subject from experimental physiology and medical history to papers concerned more definitely with surgery, especially neurological surgery. Many of the contributions were of distinct value to literature and, fortunately, will not have the usual fate of papers written for such volumes, as the book was issued as a supplement to the *Archives of Surgery* and, therefore, its contents will appear in the usual indexes of medical literature.

This was not the case in the two volumes[2] issued at the time of the seventieth birthday of Sir William Osler, July 20, 1919. These vol-

umes, too, contain many unusual papers, but, unfortunately, buried as they are in a contribution of this type, many will never find their way into the index of our literature.

More recently, two other birthday books have appeared, both of different type than those mentioned above. The Osler Club of London, an active group of young students of medicine, most of whom never knew Osler in person, conceived the idea of presenting to Sir D'Arcy Power, on his seventy-fifth birthday, November 11, 1930, a book of his selected writings from 1877-1930[3]. This book illustrates, as perhaps no other method could, the unusual diffuse interest of the author in medical history. The papers cover his well-known lectures on John Hunter, William Harvey, John Ward, and many other English medical worthies. In addition, there are extracts from the shorter papers, especially the brilliant series of surgical eponyms published in the *British Journal of Surgery* for the last ten or more years. To the American surgeon the most interesting paper will be that on "How the Tradition of British Surgery Came to America." The book concludes with a short title bibliography of the writings of Sir D'Arcy Power, as well as with an excellent index.

The second recently published volume, of an entirely different character, is a collection by the Milbank Memorial Fund of New York of the events that took place all over the world at the time of the eightieth birthday of Dr. William H. Welch, April 8, 1930[4]. The principal meeting, in which President Hoover took part, was held in Washington, but in addition, there were simultaneous meetings throughout the country and in Europe. In this country, physicians met to honor Dr. Welch in New York; Baltimore; Norfolk, Connecticut, his birthplace; New Haven; and at the Universities of Princeton, Minnesota, Stanford, and Oregon,—to mention only a few of the gatherings in this country. Outside of America, celebrations were held in Geneva, at the headquarters of the Health Section of the League of Nations; at Nyon, Switzerland; in Paris; London; Peiping, China; and Tokyo, Japan. The report of these meetings makes interesting reading and, in addition, this book contains all the tributes by Dr. Welch's friends delivered at the time of his birthday. One feels greatly indebted to the Milbank Memorial Fund for collecting the notices of the various meetings and preserving them in book form. Very few members of the medical profession could be honored in such a widespread manner, and this book, therefore, is unique in both its purpose and its contents.

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2 Contributions to Medical and Biological Research dedicated to Sir William Osler. 2 vol. New York: P. B. Hoeber, 1919.
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4 William Henry Welch at Eighty. New York: Milbank Memorial Fund, 1930.

THE PROPOSED RECOGNITION OF CHIROPRACTIC

THE Committee on State Administration of the Massachusetts Legislature has reported a bill designed to give legal recognition to chiropractic. A member of the Legislature has given the *Journal* a bill which he stated is the one referred to. At the present time the draft of the new bill is not available but it is said that this bill is a replica of Senate 361 reported by the Committee on Ways and Means of the 1929 legislature. This bill was defeated in that year.

The important provisions are: The Board of Registration in Medicine shall be assisted in the examination of applicants by two chiropractors who shall be appointed by the Governor. These assisting chiropractors shall have graduated from a legally chartered chiropractic school, college or university and shall have been residents of the Commonwealth for at least three years and shall be associated with certain members of the board in conducting examinations.

Chiropractic is defined as the "external treatment of the human spine by mechanical or manual means". Persons registered under the provisions as set forth shall not be permitted to prescribe or administer narcotics or alcohol or any other drugs for internal use, or practice operative surgery or obstetrics.

Applicants must have graduated from a chiropractic school, college or university which gives a course of at least 2260 minute daylight hours and must have had the educational qualifications required for graduation from a public high school. They must have been in personal attendance on the courses given in the chiropractic institution. The usual provisions for moral character and the conditions relating to the revocation of registration are included in the bill. The examination shall include the subjects of anatomy, physiology, symptomatology, hygiene, gynecology, sanitation, physiological chemistry, histology, pathology, chiropractic analysis and also the principles and practice of chiropractic. Provision is made for reciprocal registration.

A waiver is included in favor of those who have practiced chiropractic for at least one year and were graduated from an acceptable chiropractic institution prior to July 1, 1925. Such persons may be registered without examination.

The arguments against the registration of chiropractors or any of the cults are based on the fact that Massachusetts has established a single standard for applicants who seek to practice the healing art. This standard is already lower than that regarded as reasonable by most of the states of the Union for practitioners of medicine. Under our law, graduates of substandard schools may be registered. Anyone desiring to practice medicine should meet these very easy requirements. Chiropractic is the practice of medicine and although the bill provides for the limitation of the powers of chiro-

practors the absurdity of allowing anyone to treat patients suffering with malignant disease, for example, by chiropractic measures is of course self-evident.

There should be no weakening of our present requirements, but rather reconstruction of the medical practice act. The present requirement, to the effect that the only premedical education necessary for registrants is that equivalent to graduation from a high school, is altogether too elastic.

In the progress of medicine there is no need for the cults. The claims for chiropractic are unsound. The registration of this cult would be followed by appeals for legislative approval of other irregular forms of practice.

The history of the rise and fall of the cults is impressive. They come and go. Scientific medicine must be the resource of the future.

Delaware has dealt with this problem through its Governor who has returned to the Legislature without his approval a bill to create a board of chiropractic examiners and to regulate the practice of chiropractic. In his refusal to sign the bill his reasoning is clear and conclusive as follows:

> The purpose of the act, as I understand it, is to legalize the practice of chiropractic in this state. Practitioners of this cult are not recognized now. Do they profess to be doctors in the same sense of the term as is commonly understood to apply to men and women of the medical profession? In so far as I am able to determine there is not a recognized medical school in the country that includes in its curriculum a course in chiropractic. This fact in itself seems singularly significant.
>
> Even to the lay mind the idea that all disease of whatever character is due to spinal displacements of a mild sort, and that cures of such ailments as tuberculosis, smallpox, diphtheria, scarlet fever and others can be effected by manipulation and fingering of the spine is preposterous.
>
> Before returning this bill to you I have satisfied myself that the training and education a chiropractor, or drugless healer, needs to practice his art does not fit him properly to advisedly treat the sick.
>
> Wherefore, it seems to me it would be inconsistent for the Legislature to appropriate, as it will do, money for the state board of health, which board is trying to eradicate communicable diseases, and at the same time legalize the practice of a cult which does not believe in the germ theory of a disease but does teach and believe that such diseases as scarlet fever, etc., are due to a distracted vertebra and the method to prevent and cure such disease is to see that everybody has a normal spine.

The medical profession should immediately maintain an educational campaign with members of the Legislature.

THIS WEEK'S ISSUE

Contains articles by the following named authors:

Lahey, Frank H. M.D. Harvard University Medical School 1904. F.A.C.S. Surgeon, New England Deaconess and New England Baptist Hospitals. Director, Lahey Clinic. His subject is: "Non-Activated (Apathetic) Type of Hyperthyroidism." Page 747. Address: 605 Commonwealth Avenue, Boston.

Swett, Paul P. M.D. University and Bellevue Hospital Medical College 1904. F.A.C.S. Attending Orthopaedic Surgeon, The Charlotte Hungerford Memorial Hospital, Torrington. Orthopaedic Surgeon-in-Chief, The Newington Home for Crippled Children. Address: 179 Allyn Street, Hartford, Conn. Associated with him are:

McPherson, S. H. M.D. Tufts College Medical School 1913. Address: 179 Allyn Street, Hartford, Conn. And

Pike, M. M. M.D. Harvard University Medical School 1925. Address: 179 Allyn Street, Hartford, Conn. Their subject is: "Fracture of the Tibia Into the Knee Joint." Page 749.

Barton, Frank E., Jr. A.B., M.D. Boston University School of Medicine 1924. Second Assistant Visiting Surgeon, Massachusetts Memorial Hospitals. Assistant in Surgery, Boston University School of Medicine. His subject is: "The Use of Barbituric Acid Derivatives in Thyroid Surgery." Page 757. Address: 15 Bay State Road, Boston.

Dooley, Parker. M.D. Johns Hopkins University Medical School 1927. House-officer, Johns Hopkins Hospital 1927-1929. His subject is: "Undulant Fever—Report of a Case." Page 759. Address: Kent, Connecticut.

Olcott, Charles T. A.B., M.D. Cornell 1916. Instructor in Pathology, Cornell University Medical College. Assistant Pathologist, New York Hospital. His subject is: "Rupture of a Coronary Artery, Hemopericardium. Report of a Case and Review of the Literature." Page 760. Address: 8 West 16th Street, New York City.

Reid, William D. A.B., M.D. Harvard University Medical School 1909. F.A.C.P. Assistant Professor of Cardiology, Boston University School of Medicine. Visiting Physician, Massachusetts Memorial Hospitals. Associate Member, Evans Memorial Hospital. Cardiac Consultant to the Newton Hospital and the Waltham Hospital. His subject is: "The Diagnosis of Congenital Defects of the Heart." Page 764. Address: 510 Commonwealth Avenue, Boston.

McClure, Charles W. M.D. Ohio State University College of Medicine, Columbus 1910. Member Senior Staff Evans Memorial. Chief of Gastrointestinal Division of Department of Biochemical Research, Evans Memorial. Gastroenterologist to the Out-Patient Department, Massachusetts Memorial Hospitals. Visiting Physician to the Massachusetts Memorial Hospitals. Address: 416 Marlborough Street, Boston. Associated with him are:

Huntsinger, Mildred E. M.A. Chemist to the Department of Biochemical Research, Evans Memorial. Address: 110 Highland Avenue, Arlington.

BLOOMBERG, ESTHER. B.S. Technical chemist to the Department of Biochemical Research, Evans Memorial. Address: 1409 Commonwealth Avenue, Brighton. Their subject is: "Studies in Fat Metabolism. III. New Procedure for the Isolation and Quantitation of the Total Fatty Acids in Small Amounts of Bile." Page 764.

BARNEY, J. DELLINGER. B.A., M.D. Harvard University Medical School 1904. F.A.C.S. Assistant Professor of Genito-Urinary Surgery, Harvard University Medical School. Chief of Service, Urological Department, Massachusetts General Hospital. His subject is: "Coccus Infections in and Around the Kidney." Page 770. Address: 87 Marlborough Street, Boston.

CORBETT, J. J. A.B., M.D. Harvard University Medical School 1906. F.A.C.S. Ophthalmic Surgeon-in-Chief, Boston City Hospital. Ophthalmic and Aural Surgeon-in-Chief, Malden Hospital. Consulting Ophthalmic and Aural Surgeon, Whidden Memorial Hospital, Everett, Mass. His subject is: "Epithelioma of the Eyelid." Page 774. Address: 520 Beacon Street, Boston.

BEARSE, CARL. M.D. Tufts College Medical School 1915. Army Medical School, Washington, D. C., 1918. F.A.C.S. Assistant Visiting Surgeon to Beth Israel Hospital. Consulting Surgeon to Whidden Memorial Hospital, Everett, Mass. His subject is: "On the Draping of Patients for Vaginal Operations." Page 776. Address: 483 Beacon Street, Boston.

The Massachusetts Medical Society

THE TREASURER'S REPORT WITH RESPECT TO DIVIDEND DISTRIBUTION

The Treasurer of the Massachusetts Medical Society makes the following report regarding the dividend distribution made April 1, 1931:

The Council of the Society voted to distribute the sum of $4000 to the District Societies this year. The total number of payments received in time to count for the dividend computation was 3453, making the dividend per each paid member $1.158412.

The following table gives the number of payments in each District and the dividend:

District	Number Reported Paid	Check
Barnstable	34	$39.39
Berkshire	89	103.10
Bristol North	44	50.97
Bristol South	159	184.19
Essex North	139	161.02
Essex South	187	216.62
Franklin	31	35.92
Hampden	241	279.18
Hampshire	41	47.49
Middlesex East	84	97.31
Middlesex North	103	119.32
Middlesex South	568	657.98
Norfolk	582	674.20
Norfolk South	73	84.56
Plymouth	105	121.63
Suffolk	597	691.57
Worcester	309	357.94
Worcester North	67	77.61
	3453	$4000.00
Non-resident	187	
Total paid March 1, 1931	3640	
Total paid March 1, 1930	3584	

174 payments were made between March 1, 1930, and April 1, 1930, a total of 3758. From March 1 to April 1, 1931, 145 payments were made, making a total of 3785, a gain of 27 over 1930. In spite of the hard times and the increase in dues this is a remarkable showing.

ARTHUR K. STONE, M.D., *Treasurer.*

MASSACHUSETTS LEGISLATIVE NOTES

House 781, on the petition of A. J. Pare for the establishment of a board of examination and registration to regulate the practice of magnetic healers, has been given leave to withdraw.

House 760, on the petition of the Citizens Committee opposing compulsory vaccination to make vaccination and inoculation non-compulsory, has been given leave to withdraw.

HOUSE—No. 1496

THE COMMONWEALTH OF MASSACHUSETTS

In the Year One Thousand Nine Hundred and Thirty-One

An Act enlarging the Scope of the Definition of "Pasteurized Milk."

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

Section one of chapter ninety-four of the General Laws, as most recently amended by section one of chapter three hundred and seven of the acts of nineteen hundred and twenty-eight, is hereby further amended by striking out, in the one hundred and twenty-seventh line as printed in the General Laws, the word "and" the second time it occurs and inserting in place thereof the following:—or heated so that the temperature of the milk is maintained at not less than one hundred and sixty degrees Fahrenheit for not less than twenty seconds before it enters the cooling system of the apparatus, and in either case,—so that the definition of "Pasteurized milk" will read as follows:—"Pasteurized milk," natural cow's milk not more than seventy-two hours old, when pasteurized, subjected for a period of not less than thirty

minutes to a temperature of not less than one hundred and forty, nor more than one hundred and forty-five, degrees Fahrenheit, or heated so that the temperature of the milk is maintained at not less than one hundred and sixty degrees Fahrenheit for not less than twenty seconds before it enters the cooling system of the apparatus, and in either case immediately thereafter cooled to a temperature of fifty degrees Fahrenheit or lower.

This bill is fairly satisfactory although not exactly like the one advocated by the State Department of Public Health.

MISCELLANY

PHYSICIANS APPOINTED TO EXAMINE RUSSELL NOBLE

Doctor C. A. Bonner, Superintendent of the Danvers State Hospital, and Dr. L. Vernon Briggs have been appointed by Dr. Kline to examine and report on the mental state of Russell Noble, the seventeen-year-old alleged murderer of Mrs. Ellis of Haverhill.

This examination according to the agreement of counsel for Noble and the district attorney should be made before the possible indictment of Noble.

THE PROPOSED DISINTEGRATION OF THE MASSACHUSETTS PUBLIC WELFARE COUNCIL

To those who may have had little or no knowledge of the Massachusetts Public Welfare Council, it may be of interest as a historical incident that under the inspiration of the then governor, Mr. Allen, an organization was formed under the title of the Massachusetts Public Welfare Council for the purpose of dissemination of information to the people of the Commonwealth concerning the State's public welfare work and to foster and promote the advancement of that work. A number of prominent citizens became members of this Council with Mr. Christian A. Herter as President, Mr. F. P. Cabot, Vice-President, Mr. Malcolm Donald, Treasurer and Mr. Wendell D. Howie, Executive Secretary. Dr. Alexander S. Begg is chairman of the Executive Committee.

Governor Ely has been asked as to whether he wished the Council to be kept alive but although his advice was sought soon after his election, no answer has been received.

The officers now feel that since there is no evidence of the governor's interest in this organization, it seems best to disband. It has been felt by the officers that the educational work carried on had satisfactory results and that at some later date it may seem advisable to reorganize.

THE SIGHT-SAVING REVIEW

Uniting the scientific, educational, industrial and social work forces striving to prevent blindness and conserve vision throughout the United States, the National Society for the Prevention of Blindness has placed in the first issue of its new quarterly journal, *The Sight-Saving Review*. Copies will be received by ophthalmologists, illuminating engineers, school physicians and nurses, public health administrators, safety directors, sight-saving class teachers and supervisors, and others.

The magazine will serve both popular and technical groups.

It would be a useful addition to the reading material in doctors' offices.

ALCOHOL AND CIRRHOSIS OF THE LIVER

Dr. Albert M. Snell of the Mayo Clinic is reported to have said that alcohol taken into the system does not commonly cause cirrhosis of the liver although this disease occurs in about five per cent. of cases of alcoholism. Of the cases of cirrhosis, alcohol seems to be responsible for about half.

VEGETABLES AND FRUITS FOR YOUNG CHILDREN

Mrs. R. S. Carpenter, specialist in child nutrition of the Bureau of Home Economics, is advocating the use of bananas, tomatoes, citrus fruits, cabbage, carrots and celery in the dietary of the two-year-old child.

Bananas should be cooked if not fully ripe as shown by dark seeds and mealy pulp and brown mottled skin. Cabbage should be cooked quickly without fat meat, carrots should be grated and chopped, celery can be served in sandwiches.

She claims that children can have a more varied diet than has been considered by many persons.

MORTALITY RATES

Telegraphic returns from 81 cities with a total population of thirty-six million for the week ending March 21, indicate a mortality rate of 13.6 as against a rate of 13.3 for the corresponding week of last year. The highest rate (19.9) appears for New Orleans, La., and the lowest (7.0) for Flint, Mich. The highest infant mortality rate (24.4) appears for Camden, N. J., and the lowest (15) for Salt Lake City, Utah.

The annual rate for 81 cities is 14.1 for the twelve weeks of 1931, as against a rate of 13.3 for the corresponding weeks of 1930.

MEDICAL CARE DURING PREGNANCY

Dr. Haven Emerson is quoted as having said that less than one-fourth of the pregnant women of this country are having proper medical supervision. He also claims that the general health of the people can be improved most effectively through expert prenatal care and supervision of young children.

CORRESPONDENCE

SUSPENSION OF THE REGISTRATION OF DR. EDWARD J. FLAHERTY AND ALSO THAT OF DR. IRVING F. ARMSTRONG

Dear Doctor:

At a special meeting on April 2, 1931, the Board of Registration in Medicine voted that the registrations of Dr. Edward J. Flaherty of Maynard and Dr.

Irving F. Armstrong of Hudson be suspended until further action of the Board on the record of the Middlesex Superior Court of their conviction on the charge of conspiracy to steal.

FRANK M. VAUGHAN, M.D., *Secretary.*

NEWS ITEMS

DR. FREDERICK T. LORD HAS RECOVERED—Dr. Frederick T. Lord, who was recently a victim of pneumonia, has fully recovered his health and has resumed his practice. His convalescence was hastened by a vacation in the South.

DR. GEORGE R. MINOT DELIVERS A LECTURE AT THE VANDERBILT MEDICAL SCHOOL—Dr. George R. Minot, Professor of Clinical Medicine at Harvard, and Director of the Thorndike Memorial Laboratories at the Boston City Hospital, recently delivered the Alpha Omega Alpha lecture at the Vanderbilt School of Medicine, Nashville, Tennessee. Dr. Minot chose for his subject, "The Treatment of Anemia."

DR. E. M. HODGKINS DELIVERS AN ADDRESS AT THE FENWAY HOSPITAL—Dr. Edward M. Hodgkins, assistant professor of surgery at Tufts Medical School, spoke at the Fenway Hospital Thursday, April 2. His subject was "The Choice of Operative Methods in the Cure of Inguinal Hernia" and there was a lantern slide demonstration.

OFFICERS ELECTED AT THE ANNUAL CONVENTION OF THE AMERICAN COLLEGE OF PHYSICIANS—President: Dr. S. Marx White of Minneapolis was inducted into office. President-elect for 1932: Dr. Francis M. Pottenger, Monrovia, California.

Next year's Convention will be held in San Francisco.

Dr. James H. Means of Boston was elected to the board of regents and Dr. Edwin W. Gehring of Portland, Maine, to the board of governors.

NOTICES

MEDICAL CLINIC AT THE PETER BENT BRIGHAM HOSPITAL

At 3:30 on Thursday, April 16, in the Amphitheatre of the Peter Bent Brigham Hospital, a medical clinic will be given by Dr. Henry A. Christian, to which physicians are cordially invited. These clinics will be held regularly on Thursday afternoons.

AN UNFORTUNATE AND UNTRUE REPORT OF A DEATH

We are very glad to quote the saying of Mark Twain with reference to his death that it was "very much exaggerated" and we are very much pleased to find that the report of the death of Dr. J. T. Sullivan of Dorchester was an error. Dr. Sullivan reports to us that he is alive and well and wishes to be continued as a member of the Massachusetts Medical Society.

The error was due to the report of the death of another Dr. J. T. Sullivan in the *Journal of the American Medical Association*, who was not a member of the Massachusetts Medical Society.

REMOVAL

Armand L. Caron, M.D., announces the removal of his office from 390 Main Street to the Medical Arts Building, 36 Pleasant Street, Worcester, Massachusetts.

REPORTS AND NOTICES OF MEETINGS

PLYMOUTH DISTRICT MEDICAL SOCIETY

The March meeting of the Plymouth District Medical Society was held March 24, 1931, at the Moore Hospital. The meeting was presided over by Dr. Frederick W. Murdock, president of the society. The reading of the records of the last meeting was omitted.

Dr. Moore read a report on graduate work as provided by the Commonwealth Fund. He said that two or more general practitioners could be aided by this fund, and stated that this was designed to stimulate general practitioners in rural communities to take up postgraduate work in order that they might become proficient in the recent methods of diagnosis, also that they intended to start with Berkshire county and introduce this scheme into the different counties of Massachusetts. This course will begin April 1, 1931, and will be held at Harvard University.

Dr. George A. Moore, chief surgeon of the Moore Hospital, then showed a beautiful set of moving pictures of hunting seals in the far north. These were very interesting at this time because of the disaster that befell the Viking recently.

Dr. Thomas H. McCarthy, former president of the Plymouth District Medical Society and now Vice-President of the Massachusetts Medical Society, was then introduced. Dr. McCarthy gave his report as chairman of the legislative committee. He summarized the bills that have been considered or are now before the legislature. He expressed his belief that most of the members are familiar with them. The one for showing organs, that have been removed by surgeons, to relatives was opposed because it was unreasonable. The extension of time in which suits against physicians and hospitals for alleged malpractice may be brought was opposed. The contraception bill has been given leave to withdraw. Dr. Bigelow's bill for hospitals for the treatment of rheumatism and the chiropractic bill have not been reported out of the committee*. In discussing Dr. Woodward's vaccination bill, Dr. McCarthy said that it was passed in the house by a 4 to 1 vote but was killed in the senate. The bill providing for liens in favor of physicians, nurses and hospitals is still in committee. In discussing the chiropractic bill, Dr. Thomas H. McCarthy predicted that the state will be

*A report is current that a substitute chiropractic bill has been entered.

invaded by these people when their bill is before the committee and the hearing will be packed with those who have been interested in urging favorable action. Over in one corner of the committee room will be about a dozen or fifteen physicians while the rest of the room will be crowded with these people. They mean business and intend to push this bill through if they possibly can. Large sums of money are being donated in order that they may use every means to get this bill through this year. Recently a committee from the chiropractic society came before our legislative committee and offered a compromise, saying that all they would ask was that they be allowed to treat minor diseases. A man might get an infection on his heel and if they were allowed to treat it and this patient should get septicemia and die, I suppose that would come under the head of a minor disease. After considering the matter, the legislative committee of the society refused to compromise. The chiropractors told our legislative committee that they had $50,000 to push this bill through and they were going to make strenuous efforts to secure recognition. Now if physicians are not concerned as to whether these people are allowed to practice, in fact if we are not interested enough to have them take the examination of our single standard board and prepare themselves in much the same manner that the osteopaths have done, then it is our own fault if they succeed in getting their special board for the licensing of chiropractors in the State of Massachusetts. The Massachusetts Medical Society has always stood for the single standard for the practice of medicine or healing the sick in any way in this State. When these chiropractic colleges teach and prepare their students so that they may take our board of registration examination as a prerequisite to practice in the State of Massachusetts and be examined in all of the subjects that the osteopaths, homeopaths and allopaths have, we are quite willing that they should practice in this State in any way that they may see fit, but to have a special board and allow the State of Massachusetts to endorse these people who have only a limited knowledge of the pathology of the human system or in fact know little about diagnosis and disease, it does not seem wise to admit them to practice. When they demonstrate that they are well prepared in the arts and sciences of healing the sick, we are only too glad to welcome them. In discussing the vaccination bill, Dr. McCarthy said he did not care personally how the bill came out because if there should be a smallpox epidemic the doctors would be able to protect themselves. This bill has been before the house for the last fifteen years and each time it has been killed. This year after it had been passed by the house by a 4 to 1 vote it went into the senate and without debate and without even one word in its favor the senate simply killed it. The followers of Mary Baker Eddy employ each year individuals and lobbyists to kill this vaccination bill. It seems rather strange to me that a small organization like this can have such powerful influence to defeat this most excellent bill. Dr. McCarthy said that he wrote to a number of different senators in regard to this bill. Some of them promised to give it their best consideration but he said he felt that our senators were not of ordinary intelligence because they were not able to see the virtue of good common sense medical bills in the majority of cases and this year especially they evidently had it all fixed beforehand to kill this bill. In speaking of the influence he tried to exert over the senator from his district Dr. McCarthy said he wrote to a gentleman who was in Florida to see whether he could not interest this senator to vote for this bill. The reply from Florida to Dr. McCarthy stated, "I am sorry I cannot give you any aid. The senator has been seen two or three times. He does not favor the bill and he has never favored it as he is opposed to vaccination. We have a very large membership of physicians and surgeons all over the State of Massachusetts. In each senatorial district there are usually one hundred or more physicians and surgeons. If we cannot influence our senators, I feel it is because of a general apathy among these men and not because we lack the numbers or influence to bring to bear on these senators. I feel that if we started earlier, when we know full well that a bill like this is coming up, to make a drive on the senators and representatives in each district all over the State, we could overcome any influence that might be used against us especially in promotion of bills that are for the welfare of the people. Dr. McCarthy said, "I have given you the best report that I possibly can. I have taken a keen interest in this work and if you are not satisfied, then all I can say is, I have given you the best that is in me." Dr. McCarthy was given a tremendous round of applause.

This being the meeting before the close of the year, a nominating committee was elected consisting of Dr. Richard Rand of Abington, Dr. Edgar Hill and Dr. John P. Shaw of Plymouth. This nominating committee will present the list of officers to be elected for the ensuing year at the next meeting.

Dr. Murdock then introduced Dr. George A. Moore who was the host of this meeting. Dr. Moore, who was assisted by Mr. Arthur M. Keith, showed color photographic illustrations of surgical specimens, which accurately reproduced the color of the tissues. The first picture depicted gangrene in the left foot with arteriosclerosis. He also showed a very beautiful colored picture of gangrene of Meckel's diverticulum. The next picture showed gangrenous appendix cases, six in number. Dr. Moore then referred to gall bladder cases in which he had removed the organ. Some of them were gangrenous and one was malignant. He showed one gall bladder that had calcareous deposits in the wall of the cystic duct. It was thought at first to be malignant but was proved afterward to be benign. Other pictures showed a case of gall bladder with a stone embedded solidly at the outlet of the cystic duct, a case of adenocarcinoma in the wall of the small intestines, also one of the pelvis of the kidney, a retracted spleen, adenocarcinoma of the fundus of the uterus and fibroid of the uterus, a very vividly colored picture of an ovarian cyst and one of tubal preg-

nancy which showed the enlarged fetus. These pictures were excellent illustrations and were enjoyed very much by all.

Dr. Frederick Murdock, president of the society, then introduced Dr. Allan Winter Rowe, director of the Evans Memorial Hospital in Boston, who gave a very interesting talk on "Modern Diagnostic Methods." Dr. Rowe discussed briefly some of the newer developments of diagnostic methods stressing the fact that usually the so-called vital function test is no more than the end result of a wide variety of causes. He pointed out that in a long series of such tests exact duplication in the results from two entirely separate causal agents could be anticipated. Under these conditions the use of such a series possesses a very real differential diagnostic value. The necessity of standardizing such tests was explained and the galactose tolerance test was selected for illustration. The male shows a positive response to this sugar with a test meal of thirty grams through the life span. The female, on the other hand, shows a rather wide fluctuation starting with low levels in prepuberty years, advancing to a level 100% higher as maturity supervenes, while the influence of menstruation, castration, functional failure of the ovaries and the climacteric all produce characteristic changes in the level for each of these conditions. Basal metabolism determinations were discussed and the necessity for standardization here illustrated by the curve of changes taking place during pregnancy. Various types of audiometric curves were presented showing the instrument as a means of determining the nutritional level of estimating the progress of various types of ear diseases and demonstrating certain of the diagnostic aspects of the audiometric curve. In a similar manner the implications of the delineation of the visual fields were discussed with several illustrations. The use of the cardiogram both as a means of estimating cardiac derangement and equally the progress of a heart condition under treatment was taken up with records illustrating each of the several points and finally some of the newer applications of the x-ray such as the combined Graham Test in which both the gall bladder and stomach are visualized and demonstrated fluoroscopically the use of lipiodol to demonstrate the patency of the tubes, pyelograms by the employment of uroselectan and similar procedures were discussed. The technique of duodenal function testing was also described in connection with hepatic disorders. The speaker emphasized the necessity for both the clinical and the laboratory approach in the establishment of a balanced and properly documented diagnosis.

The three rooms of the Moore Hospital were filled to overflowing with physicians from the entire district, with large numbers from Plymouth, Norfolk and Bristol Counties. It was one of the largest gatherings in years. A very fine chicken dinner was served by Dr. Moore.

THE LYNN MEDICAL FRATERNITY

The "Lynn Medical Fraternity" held a meeting at Huntt's Venetian Room on March 26, 1931, at 8.15 P. M.

Through the courtesy of the manufacturers a moving picture was shown portraying the technique of the production of diphtheria antitoxin, toxin-antitoxin and vaccine from cow pox.

The guest of the evening was Dr. George H. Bigelow, Commissioner of Public Health for the Commonwealth, who spoke upon "Public Health Problems."

At the conclusion of his remarks the discussion became general and spirited.

WM. T. HOPKINS, *Reporter.*

HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held at 8:15 P. M. in the amphitheatre of the Peter Bent Brigham Hospital on the evening of Tuesday, April 14.

PROGRAM

Presentation of cases.

Paper: "Two Pioneer Army Surgeons—Edwin James and John Gale" by Dr. Irving S. Cutter, Dean of Northwestern University Medical School.

Students, physicians, and nurses cordially invited to attend.

WILLIAM P. MURPHY, M.D., *Secretary.*

NEW HAMPSHIRE SURGICAL CLUB

The 33d semi-annual meeting of the New Hampshire Surgical Club will be held at the Notre Dame Hospital at Manchester, N. H., on April 28, 1931. This will be, as the semi-annual gathering has always been, a clinical meeting.

The meeting is in the very able charge of John F. Holmes, M.D., Manchester, N. H., who has labored hard and long to insure the successful outcome of the same.

An operative clinic will be staged in the forenoon with Wayne Babcock, M.D., of Philadelphia, demonstrating spinal anaesthesia and operating. This fact alone should insure a large meeting as Dr. Babcock needs no introduction to New England. Dr. Babcock will favor us in addition with a paper in the afternoon, taking up "The Operative Treatment of the More Difficult Types of Hernia."

One or more papers in addition to this will be given by members of the club.

The physicians of New England are invited to the exercises.

WENDELL P. CLARE, M.D., *Secretary.*

BELMONT MEDICAL SOCIETY

There will be a meeting of the Belmont Medical Society, Friday, April 24, at 8.45 P. M., at All Saints' Parish House, Clark street, Belmont. The speaker will be Dr. Walter D. Garfield, Assistant Professor of Dermatology at Tufts College Medical School, Visiting Physician for Diseases of the Skin at the Boston City Hospital and Visiting Dermatologist at the Cambridge City Hospital. Subject: The Skin Manifestations of Syphilis.

STEPHEN J. MALONE, M.D., *Secretary.*

NEW ENGLAND ROENTGEN RAY SOCIETY

The New England Roentgen Ray Society will hold the next meeting on April 17, 1931, at the Boston Medical Library at 8:15 P. M. Dr. Ross Golden of New York will read a paper on "A Discussion of Some of the Less Common Sources of Abdominal Symptoms." The usual dinner at the Harvard Club at 6:15 P. M. will precede the meeting.

T. R. HEALY, *Secretary.*

THE THIRD INTERNATIONAL CONGRESS OF RADIOLOGY—PARIS, "la Sorbonne", 26-31 JULY 1931

The Third International Congress of Radiology will take place in Paris from July 26 to 31, 1931, under the High Patronage of M. le Président de la République, the Honorary Presidency of Madame Curie and the executive Presidency of Dr. Antoine Beclere.

All Congress Meetings will take place in the amphitheatres of "la Sorbonne", 47, rue des Ecoles.

CONGRESS PROGRAM

Sunday, July 26—Meeting of the Delegates of the 26 countries officially represented.
Opening of the Exhibition of Electro-Radiological Apparatus. Welcome Meeting with dance.

Monday, July 27—Opening meeting of the Congress in the "Grand Amphitheatre de la Sorbonne," in presence of M. le President de la Republique.
Beginning of work of the Sections.

Tuesday, July 28—Question of the day to be discussed and work of Sections. Evening at the Opera.

Wednesday, July 29—Question of the day to be discussed and work of Sections.
Visit to the Exhibition of Apparatus.

Thursday, July 30—Question of the day to be discussed and work of Sections. Subscription Banquet.

Friday, July 31—Work of Sections.
General Closing Meeting of the Congress.
Night festival at the Colonial Exhibition.

Information may be acquired on application to the Office of the Third International Congress of Radiology, 122, rue La Boëtie, Paris (8e).

NEW ENGLAND OBSTETRICAL AND GYNECOLOGICAL SOCIETY

Headquarters—University Club
April 22, 1931
Boston

MORNING CLINICS

8.00 Assembly for those who wish at the University Club.

9.00-11.30 The Free Hospital for Women, Brookline.

9.00-11.00 Boston City Hospital Gynecological Service.

9.00-11.30 Massachusetts General Hospital.

1. Abnormal uterine bleeding. Types described by Wilfred Shaw. Slides and specimens.—J. V. Meigs.
2. Substitution therapy in amenorrhea. Presentation of cases. Fuller Albright.
3. Use of the Rabbit as a test animal in the Aschheim-Zondek test for pregnancy.—Perry C. Baird.
4. Thrombocytopenic purpura hemorrhagica as a cause of abnormal uterine hemorrhage. Presentation of cases. Langdon Parsons.
5. Rupture of the graafian follicle, the corpus luteum and small ovarian cysts as a reason for abdominal emergencies. Slides and specimens.—W. F. Hoyt.
6. Acute Salpingitis in Pregnancy.—John Stewart.

10.30-12.00 Boston Lying-In Hospital.

12.30 Luncheon at University Club.

AFTERNOON CLINICS

2.30- 4.30 Carney Hospital.
2.30 (1) Gynecological Operations.
(2) Motion Picture Film, Vaginal Hysterectomy.

2.30- 4.30 Huntington Hospital.
Carcinoma of Breast.—Dr. C. C. Simmons.
Carcinoma of Retained Cervix.—Dr. G. A. Leland, Jr.
Postmortem Findings in Carcinoma of Cervix. Dr. S. Warren.
The Effect of Radium upon Carcinoma of Cervix.—Dr. J. V. Meigs.
Avertin Anesthesia.—Dr. G. W. Taylor.
X-ray Treatment of Carcinoma of Cervix.—Dr. C. L. Swan, Jr.

2.30- 4.30 St. Elizabeth's Hospital.

2.30- 4.30 Boston City Hospital Gynecological Service.

2.30- 4.30 Homeopathic Hospital.

5.15 Executive Meeting—followed by General Meeting.

7.30 Dinner at the University Club.

Dr. A. Warren Stearns, who is Dean of Tufts Medical School and Commissioner of Correction for the State of Massachusetts, will be the principal speaker of the evening.

HARVARD MEDICAL ALUMNI ASSOCIATION

PROGRAM

Friday, April 17

Registration Bureau in Vanderbilt Hall. All must register.

Session in the Gymnasium

9:00 Dr. Elliott P. Joslin,
"The Treatment of Diabetes with a Demonstration of Cases."

9:45 Dr. Hans Zinsser,
"The Relation of Immunology to Clinical Medicine."

10:15 Dr. Walter B. Cannon,
"A Contrast of Old and New Teaching Methods in Physiology. A Brief Account of

Some Recent Physiological Investigations." Illustrated by moving pictures.

11:30 Clinic in the Peter Bent Brigham Hospital Amphitheatre.

By Drs. Harvey Cushing and Henry A. Christian.

1:00 Cafeteria lunch in Vanderbilt Hall

2:00 Dr. Elliott C. Cutler (Western Reserve), "The Present Status of Cardiac Surgery."

2:30 Dr. George R. Minot (H. M. S.), "The Treatment of Anaemia." Lantern slides.

2:40 Dr. Otto Folin (H. M. S.), "Blood Analysis; Its Present Status and Applicability."

3:00 Wilson G. Smillie (H. S. P. H.), "Field Studies in Acute Respiratory Diseases."

3:20 Dr. Hugh Cabot (Mayo Clinic), "The Place of Nephrostomy in the Management of Surgical Conditions of the Kidney."

3:40 Dr. Francis G. Blake (Yale), "Host Factors in Pneumococcus Pneumonia."

4:00 Dr. Theobald Smith (Rockefeller Institute), "Disease as a Biological Problem."

5:00 Business Meeting. Election of New Officers.

7:00 Dinner in Dormitory (Bowditch Hall)

Speakers: Dean Edsall, Dr. William S. Thayer, and President Lowell.

Saturday, April 18

9:00-10:30 Hospital Clinics. Palmer Memorial Hospital—Dr. D. F. Jones and staff.

Huntington Hospital—Dr. J. C. Aub and staff.

Deaconess Hospital—Dr. F. H. Lahey and staff.

Beth Israel Hospital—Dr. H. Blumgart and staff.

Children's Hospital—Dr. C. F. McKhann and staff.

Good Samaritan Hospital—Dr. Wm. D. Smith and staff.

Psychopathic Hospital—Dr. C. Macfie Campbell and staff.

Free Hospital for Women—Dr. Wm. P. Graves and staff.

Boston Lying-In Hospital—Dr. F. C. Irving and staff.

11:00-12:30 Massachusetts General Hospital — Dr. J. H. Means and staff.

Boston City Hospital—Dr. G. R. Minot and staff.

1:00 Class luncheons or dinners.

3:00-5:00 Inspection of new building at Boston Medical Library. Mr. James F. Ballard will demonstrate the Bullard collection of medical incunabula and rare and interesting books and prints from the 16th and 17th centuries.

SOCIETY MEETINGS CONGRESSES AND CONFERENCES

April 10—The William Harvey Society. See page 471, issue of February 26.

April 14—Harvard Medical Society. See page 788.

April 16—Medical Clinic at the Peter Bent Brigham Hospital. See page 786.

April 17—New England Roentgen Ray Society. See page 789.

April 17-18—Harvard Medical Alumni Association. See page 789.

April 21—South End Medical Club. See page 742, issue of April 2.

April 22—The New England Obstetrical and Gynecological Society. See page 789.

April 24—Belmont Medical Society. See page 788.

April 28—New Hampshire Surgical Club. See page 788.

May 6—Cardiac Course. See page 854, issue of October 23, 1930.

May 11-14—Meeting of the National Tuberculosis Association at Syracuse. See page 1310, issue of December 25.

June 8-12—Woman's Auxiliary to the American Medical Association. See page 743, issue of April 2.

June 8-14—International Hospital Congress. See page 521, issue of March 5.

June 9—The Scientific Session of the American Heart Association. See page 742, issue of April 2.

June 16-19—Catholic Hospital Association. See page 690, issue of March 26.

July 6-11—Medical Clinic, Paris. See page 520, issue of March 5.

July 26-31—Third Congress of the Pan American Medical Association. See page 632, issue of March 19.

July 27-31—Third International Congress of Radiology, Paris. See page 789.

September 14-17—The American Public Health Association. See page 632, issue of March 19.

DISTRICT MEDICAL SOCIETIES

Bristol North District Medical Society

April 16—Complete notice appears on page 744.

September 17.

Essex North District Medical Society

Next meeting: Amesbury Country Club, Amesbury, May 13, 1931; dinner at 12.30. Speakers, Wm. H. Ross, President, New York State Medical Society, "A Medical Society's Public Relations Committee at Work."

Wm. J. French, Medical Director Commonwealth Fund, New York, "Fellowship Grants to Doctors in Rural Communities."

Essex South District Medical Society

Thursday, May 7—Censors meet at Salem Hospital at 3:30 P. M.

Tuesday, May 12—See page 690, issue of March 26.

Franklin District Medical Society

May—The meeting will be held on the second Tuesday of May at 11 A. M. at the Weldon Hotel, Greenfield.

Middlesex East District Medical Society

May 13—At Wakefield.

Norfolk District Medical Society

May—Annual Meeting. Date and details to be announced.

May 7—Censors' Meeting for examination of candidates at 171 Warren Street, Roxbury, 4 P. M. Candidates from schools on accepted list will forward application with certificate of graduation to the secretary at least one week prior to date of examination. Candidates from schools not on accepted list who have been in practice five years will forward applications together with five letters of recommendation from members in good standing in the Massachusetts Medical Society to Dr. P. P. Johnson, Cabot Street, Beverly, Mass., two weeks prior to date of examination. Fee for all candidates $10.00.

FRANK S. CRUICKSHANK, Secretary.

Norfolk South District Medical Society

May 7—The censors will meet at 11:30 A. M. at the Norfolk County Hospital, South Braintree. The Society meets at 12.

NATHAN R. PILLSBURY, Secretary.

Suffolk District Medical Society

April 29—Combined meeting with the Boston Medical Library. This meeting will be held at 8:15 P. M. Election of Officers.

The medical profession is cordially invited to attend this meeting.

GEORGE S. DERBY, M.D.,
President, Suffolk District Medical Society.

LELAND S. McKITTRICK, M.D.,
Secretary, Suffolk District Medical Society.

HILBERT F. DAY, M.D.,
Boston Medical Library.